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General Schedule
Position Classification Standards

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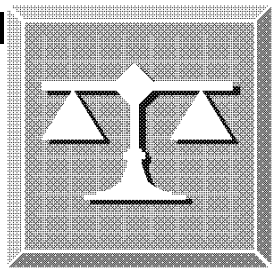

JOB FAMILY POSITION CLASSIFICATION STANDARD FOR ADMINISTRATIVE WORK IN THE INFORMATION TECHNOLOGY GROUP, GS-2200

Series Covered By This Standard:

Information Technology Management, GS-2210

United States Office Of Personnel Management

Workforce Compensation And Performance Service

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Classification Programs Division

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INTRODUCTION

This job family standard provides series and specialty definitions, titling instructions, and grading criteria for nonsupervisory two-grade interval administrative positions in the Information Technology Group, GS-2200.

COVERAGE

This job family standard covers the following occupational series:

Series
Information Technology Management, GS-2210

MODIFICATIONS TO AND CANCELLATIONS OF OTHER EXISTING OCCUPATIONAL SERIES AND STANDARDS

Issuance of this job family standard establishes or cancels occupational series and classification standards as described in the following table. The table also indicates how to classify work previously covered by classification standards affected by this issuance.

New / Previous Series	Action Taken / How to Classify Work Previously Covered
Information Technology Management GS-2210	• Establishes this series.
Computer Specialist GS-0334	• Cancels this series. • Classify work previously covered by this series to the **Information Technology Management Series, GS-2210**. • The Computer Specialist classification standard, last revised in July 1991, is canceled and superseded by this job family standard.
Telecommunications GS-0391	• Classify work previously included in this series to the **Information Technology Management Series, GS-2210**, when knowledge of information technology, as defined in this standard, is paramount.
Other Series	• Classify work previously included in other series to the **Information Technology Management Series, GS-2210**, when knowledge of information technology, as defined in this standard, is paramount.

GENERAL SERIES, TITLING, AND OCCUPATION GUIDANCE

This section provides information on series and specialty definitions, titling instructions, and occupational guidance for nonsupervisory two-grade interval administrative positions in the Information Technology Group, GS-2200. It also provides information on titling instructions for supervisors, team leaders, and parenthetical specialties in this job family.

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210

Qualification Standard

Definition

This series covers two-grade interval administrative positions that manage, supervise, lead, administer, develop, deliver, and support information technology (IT) systems and services. This series covers only those positions for which the paramount requirement is knowledge of IT principles, concepts, and methods; e.g., data storage, software applications, networking.

Information Technology refers to systems and services used in the automated acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, assurance, or reception of information. Information technology includes computers, network components, peripheral equipment, software, firmware, services, and related resources.

Titling

The basic title for this occupation is ***Information Technology Specialist*** or ***IT Specialist***. Use the basic title without a parenthetical specialty title as the official position title for those positions that include two or more specialized information technology (IT) functions when none predominates or when there is no established specialty. Use the parenthetical specialty titles (see below) to further identify the duties and responsibilities performed and the special knowledge and skills needed. However, if individual circumstances dictate:

- you may use any combination of parenthetical specialty titles in official position titles; e.g., Information Technology Specialist (Data Management/Applications Software);
- you may continue to use other agency-established parenthetical titles where appropriate; and/or
- to accommodate automated systems limitations, you may use authorized specialty abbreviations (see below) with the full title or with an abbreviated basic title of ITSPEC; e.g., IT Specialist (OS) or ITSPEC (APPSW/SYSANAL).

Supervisors and Leaders.

- Add the prefix "Supervisory" to the title of positions classified using the General Schedule Supervisory Guide.
- Add the prefix "Lead" to the title of positions classified using the General Schedule Leader Grade Evaluation Guide.

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (CONTINUED)

Titling (continued)

Parenthetical Titles.

- Use the following parenthetical titles for specialties as defined (authorized abbreviations follow the specialty):

Applications Software – (APPSW) Work that involves the design, documentation, development, modification, testing, installation, implementation, and support of new or existing applications software.

Functions commonly performed by employees assigned to this specialty may include:

- analyzing and refining systems requirements;
- translating systems requirements into applications prototypes;
- planning and designing systems architecture;
- writing, debugging, and maintaining code;
- determining and designing applications architecture;
- determining output media/formats;
- designing user interfaces;
- working with customers to test applications;
- assuring software and systems quality and functionality;
- integrating hardware and software components;
- writing and maintaining program documentation;
- evaluating new applications software technologies; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices to the delivery of application software services.

This specialty includes positions often referred to as:

- programmer,
- programmer analyst,
- applications developer,
- software engineer,
- software developer, and
- software quality assurance specialist.

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (CONTINUED)

Titling (continued)

Customer Support – (CUSTSPT)

Work that involves the planning and delivery of customer support services, including installation, configuration, troubleshooting, customer assistance, and/or training, in response to customer requirements.

Functions commonly performed by employees in this specialty may include:

- diagnosing and resolving problems in response to customer reported incidents;
- researching, evaluating, and providing feedback on problematic trends and patterns in customer support requirements;
- developing and maintaining problem tracking and resolution databases;
- installing, configuring, troubleshooting, and maintaining hardware and software;
- developing and managing customer service performance requirements;
- providing customer training; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of customer support services

This specialty includes positions often referred to as:

- technical support specialist,
- customer support specialist,
- help desk representative, and
- maintenance specialist.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Data Management – (DATAMGT)

Work that involves the planning, development, implementation, and administration of systems for the acquisition, storage, and retrieval of data.

Functions commonly performed by employees in this specialty may include:

- analyzing and defining data requirements and specifications;
- designing, normalizing, developing, installing, and implementing databases;
- maintaining, monitoring, performance tuning, backup, and recovery of databases;
- installing, configuring, and maintaining database management systems software;
- analyzing and planning for anticipated changes in data capacity requirements;
- developing and administering data standards, policies, and procedures;
- developing and implementing data mining and data warehousing programs;
- evaluating and providing recommendations on new database technologies and architectures; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of data management services.

This specialty includes positions often referred to as:

- database developer,
- database administrator,
- data analyst,
- data administrator,
- data architect,
- storage specialist, and
- data warehouse specialist.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Internet – (INTERNET) Work that involves the technical planning, design, development, testing, implementation, and management of Internet, intranet, and extranet activities, including systems/applications development and technical management of Web sites. In most cases, the term Internet is used throughout this standard to refer generically to Internet, intranet, and extranet systems and services.

Functions commonly performed by employees in this specialty may include:

- determining overall technical design and structure of Internet services;
- monitoring functionality, security, and integrity of Internet services;
- troubleshooting and resolving technical problems with the design and delivery of Internet services;
- collecting and analyzing Internet services usage and performance statistics;
- evaluating new Internet services;
- providing technical advice to Internet content providers; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of Internet services.

This specialty includes positions that require the application of technical knowledge of Internet technology that may be referred to as:

- Web developer,
- Webmaster,
- Web manager,
- Web site administrator,
- Web operations specialist,
- Internet specialist,
- Internet developer,
- Internet architect, and
- other positions.

Do not include positions such as Webmaster, Web manager, and Web page manager that do not require a paramount knowledge of IT principles, concepts, and methods. Classify these positions to other series requiring paramount knowledge of subject matter processes.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)	**Network Services – (NETSRV)**	Work that involves the planning, analysis, design, development, testing, quality assurance, configuration, installation, implementation, integration, maintenance, and/or management of networked systems used for the transmission of information in voice, data, and/or video formats. Functions commonly performed by employees in this specialty may include: • analyzing and defining network requirements; • defining and maintaining network architecture and infrastructure; • configuring and optimizing network servers, hubs, routers, and switches; • analyzing network workload; • monitoring network capacity and performance; • diagnosing and resolving network problems; • developing network backup and recovery procedures; • installing, testing, maintaining, and upgrading network operating systems software; and • ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of network services. This specialty includes positions often referred to as: • network administrator, • LAN/WAN administrator, • network analyst, • network designer, and • network engineer. NOTE: For positions requiring a paramount knowledge of telecommunications methods and systems, see the Telecommunications Series, GS-0391. **(continued)**

Information Technology Management, GS-2210 (continued)

Titling (continued)

Operating Systems – (OS)

Work that involves the planning, installation, configuration, testing, implementation, and management of the systems environment in the context of the organization's IT architecture and business needs.

Functions commonly performed by employees in this specialty may include:

- analyzing systems requirements in response to business requirements, risks, and costs;
- evaluating, selecting, verifying, and validating the systems software environment;
- evaluating, selecting, and installing compilers, assemblers, and utilities;
- integrating hardware and software components within the systems environment;
- monitoring and fine-tuning performance of the systems environment;
- evaluating new systems engineering technologies and their effect on the operating environment, and
- ensuring that information security/information assurance policies, principles, and practices are an integral element of the operating environment.

This specialty includes positions often referred to as:

- systems programmer,
- systems software programmer,
- systems engineer, and
- software engineer.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Policy and Planning – (PLCYPLN)

Work that involves a wide range of IT management activities that typically extend and apply to an entire organization or major components of an organization. This includes strategic planning, capital planning and investment control, workforce planning, policy and standards development, resource management, knowledge management, architecture and infrastructure planning and management, auditing, and information security management.

Functions commonly performed by employees in this specialty may include:

- developing and maintaining strategic plans;
- assessing policy needs and developing policies to govern IT activities;
- providing policy guidance to IT management, staff, and customers;
- defining current and future business environments;
- preparing IT budgets;
- establishing metrics to measure and evaluate systems performance and total cost of ownership;
- identifying and addressing IT workforce planning and management issues, such as recruitment, retention, and training;
- conducting audits of IT programs and projects; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of planning and management services.

This specialty includes positions often referred to as:

- enterprise resource planner,
- IT policy and planning analyst,
- IT program management specialist, and
- IT auditor.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Security – (INFOSEC) Work that involves ensuring the confidentiality, integrity, and availability of systems, networks, and data through the planning, analysis, development, implementation, maintenance, and enhancement of information systems, security programs, policies, procedures, and tools.

Functions commonly performed by employees in this specialty may include:

- developing policies and procedures to ensure information systems reliability and accessibility and to prevent and defend against unauthorized access to systems, networks, and data;
- conducting risk and vulnerability assessments of planned and installed information systems to identify vulnerabilities, risks, and protection needs;
- promoting awareness of security issues among management and ensuring sound security principles are reflected in organizations' visions and goals.
- conducting systems security evaluations, audits, and reviews;
- developing systems security contingency plans and disaster recovery procedures;
- developing and implementing programs to ensure that systems, network, and data users are aware of, understand, and adhere to systems security policies and procedures;
- participating in network and systems design to ensure implementation of appropriate systems security policies,
- facilitating the gathering, analysis, and preservation of evidence used in the prosecution of computer crimes,
- assessing security events to determine impact and implementing corrective actions;
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of all IT services.

This specialty includes positions often referred to as:

- information systems security analyst/specialist,
- information systems security officer,
- network security officer, and
- information assurance analyst/specialist.

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Systems Administration – (SYSADMIN)

Work that involves the planning and coordination of the installation, testing, operation, troubleshooting, and maintenance of hardware and software systems.

Functions commonly performed by employees in this specialty may include:

- planning and scheduling the installation of new or modified hardware and operating systems and applications software;
- managing accounts, network rights, and access to systems and equipment;
- managing systems resources including performance, capacity, availability, serviceability, and recoverability;
- implementing security procedures and tools;
- developing and documenting standard operating procedures;
- resolving hardware/software interface and interoperability problems;
- ensuring systems functionality, integrity, and efficiency;
- maintaining systems configuration;
- managing the installation and integration of systems fixes, updates, and enhancements; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of systems administration services.

This specialty includes positions often referred to as:

- systems administrator,
- site administrator, and
- UNIX/Windows systems administrator

(continued)

Information Technology Management, GS-2210 (continued)

Titling (continued)

Systems Analysis – (SYSANAL) Work that involves analytic processes leading to the planning, design and implementation of new and improved information systems to meet the business requirements of customer organizations.

Functions commonly performed by employees in this specialty may include:

- performing needs analyses to define opportunities for new or improved business process solutions;
- consulting with customers to identify and specify requirements;
- developing overall functional and technical requirements and specifications;
- conducting business process reengineering;
- conducting feasibility studies and trade-off analyses;
- preparing business cases;
- defining systems scope and objectives;
- developing cost estimates;
- ensuring the integration of all systems components; e.g., procedures, databases, policies, software, hardware;
- implementation planning; and
- ensuring the rigorous application of information security/information assurance policies, principles, and practices to the systems analysis process.

This specialty includes positions often referred to as systems analyst and business analyst.

Organizational Titles.

Use the official position titles as outlined above for human resources management, budget, and fiscal purposes. This does not preclude continued use of organizational or functional titles for internal administration, public convenience, program management, or similar purposes. For example, a position officially titled as Information Technology Specialist (Data Management) may have an organizational title of Database Administrator. You may use such organizational titles on organization charts or other internal documents.

Occupational Information

General Occupational Information

Perhaps no other occupation has experienced the dramatic changes that have affected the information technology (IT) occupation in recent years. The growing use of information technology throughout our economy has resulted in an unprecedented explosion in the demand for skilled information technology workers. This phenomenon affects virtually every aspect of the IT human resources management process from recruitment to retirement. The position classification function is no exception. Significant developments, such as the advent of the client-server environment, popularization of the Internet and World Wide Web, establishment of external and internal networks, and the emphasis on information security have dramatically influenced the occupation, in particular the emphasis on information security. As more and more information, products, and services become widely available to customers by way of shared resources, the need to assure the confidentiality, integrity, and availability of systems, networks, and data has become increasingly important.

Any effort to predict the future course and direction of the occupation would be no more than an "educated guess." One indisputable fact is that the occupation will continue to evolve in a very rapid fashion. New functions will emerge and replace or be added to those currently in use.

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Occupational Information (continued)

Ten Specialties Within Information Technology. The standard sets out ten specialties for information technology (IT) work and defines each in detail in the section on "Titling" above. They are:

- **Applications Software –** translate technical specifications to programming specifications; develop, customize, or acquire software programs; and test, debug, and maintain software programs.
- **Customer Support –** provide technical support to customers who need assistance in installing and running systems, including hardware and software.
- **Data Management –** develop and administer databases used to store and retrieve data and develop standards for the handling of data.
- **Internet –** provide services that permit the publication and transmission of information about Government programs using the Internet.
- **Network Services –** install, configure, test, and maintain networks including hardware (servers, hubs, bridges, switches, and routers) and network software that permit the sharing and transmission of information.
- **Operating Systems –** install and maintain the operating systems environment including systems servers and operating systems software on which applications run.
- **Policy and Planning –** develop, implement, and ensure compliance with plans, policies, and standards that govern the administration of IT programs.
- **Security** – plan, develop, implement, and maintain systems and programs to protect the integrity and confidentiality of systems, networks, and data.
- **Systems Administrator –** install, configure, troubleshoot, and maintain hardware and software to ensure the availability of systems on which applications run.
- **Systems Analysis –** consult with customer to refine functional requirements and translate functional requirements into technical specifications.

We made the decision to use specialty titles for positions in the Information Technology Specialist series after considerable dialogue with stakeholders. This dialogue identified several compelling reasons for adopting official specialty titles. A very significant advantage of specialty titles is the ability to more effectively communicate job-related information to potential applicants for vacant positions. The "one-title-fits-all" approach to titling IT positions in the former Computer Specialist Series, GS-0334, failed to communicate basic information about the specific duties assigned to positions and often required applicants to spend unnecessary time and effort to gather information for positions in which they may have had no interest. Other advantages include the ability to more easily identify the composition of the current IT population for IT workforce planning purposes and the ability to more readily link job titles with required competencies.

The distinctions being made between IT positions are most evident when reviewing lists of job openings for IT positions in the private sector and in other public sector organizations. The number of different titles being used throughout the IT industry is staggering. While recognizing the merits of distinguishing between specialty areas, the need to reduce the number of specialty titles to a manageable number was imperative given the need for consistency across agency lines and the limitations of existing automated human resources information systems. The titling structure in this standard has been thoroughly tested through several iterations. It will likely change again in the future, but the titles established in this standard seem to represent the major categories of work within the occupation.

DISTINCTIONS BETWEEN ADMINISTRATIVE WORK AND ASSISTANCE WORK

It is not always easy to distinguish between specialist work classified in two-grade interval administrative positions covered by this standard and assistance work classified in one-grade interval series such as the, Computer Operation Series, GS-0332, and the Computer Clerk and Assistant Series, GS-0335. Some tasks are common to both types of occupations, particularly at the lower, developmental grades of specialist work and the higher-grade levels of administrative support or assistance work. To decide the proper occupational series, Information Technology Management, GS-2210, or one of the support or assistant occupational series, consider the characteristics and requirements of the work as well as management's intent in establishing the position.

Is it a developmental position with clear progression to higher grade levels as a specialist based on progressively more difficult assignments requiring the application of:

- a broad knowledge of information technology principles, concepts, and methods;
- a high degree of analytical ability;
- skill in problem solving;
- skill in communicating effectively, both orally and in writing; and
- an understanding of the interrelationships between the different information technology specialties?

OR

Is it a position that management establishes to support and augment the work of a specialist, requiring the application of:

- established methods and procedures; and
- a practical knowledge, as opposed to a conceptual knowledge, of the techniques and guidelines pertinent to the assignment area; and

that does **not** generally require knowledge of the interrelationships with other functional specialties or program areas?

DISTINCTIONS BETWEEN INFORMATION TECHNOLOGY WORKERS AND INFORMATION TECHNOLOGY USERS

In many work situations, it is common for employees to use computers in performing assigned duties and responsibilities. This use may vary from daily use of word processing programs and searching the Internet for job-related information to extensive development of spreadsheets, databases, and graphic-intensive publications. In most of these situations, information technology (IT) systems are used as a tool that enhances the accomplishment of the assignment where the assignment itself is the work product or service. These positions may require knowledge of the applications of IT to the assignment area and skill in the use of IT software and hardware systems. In many cases, an employee with advanced knowledge and skill in the use of IT may be regarded as the IT "guru" in the immediate organization and relied upon by other employees for limited technical advice and assistance in the application of IT to the assignment areas. However, in most cases, employees of this nature are sophisticated or advanced IT users. Classify these positions to the appropriate subject matter series associated with the assignment area rather than to the occupational series and specialties covered by this standard. The work covered by this standard requires knowledge of IT systems, concepts, and methods as the paramount requirement in comparison to IT user positions that require paramount knowledge of other subject matter principles, concepts, and methods and ancillary knowledge of IT systems, concepts, and methods. In some cases, the ancillary knowledge of IT may be identified as a required knowledge, skill, or ability (KSA) for rating applicants for a position, but this requirement does not justify assignment of the position to the IT occupational group. Refer to the **EXCLUSIONS** section for further information.

CROSSWALK TO THE STANDARD OCCUPATIONAL CLASSIFICATION

1. All Federal agencies that collect occupational data will use the Standard Occupational Classification (SOC) system for statistical data reporting purposes. The Bureau of Labor Statistics will use SOC codes for National Compensation Survey and other statistical reporting. The Office of Personnel Management (OPM) and agencies will develop and maintain the "crosswalk" between the Federal occupational series and the SOC codes to serve this need. As changes occur to the SOC codes, OPM will update this table.
2. Some supervisory and managerial positions above the first level of supervision may have a different SOC code based on supervisory status, grade, and pay plan. First-level supervisors retain the SOC code of the nonsupervisory work.

Federal Occupational Series and Position Titles And Their Related Standard Occupational Classification System Codes

Occupational Series	Standard Occupational Classification Code Based on Occupational Series		Position Title	Standard Occupational Classification Code Based on Position Title	
Information Technology Management, GS-2210	15-1099	Computer Specialists, All Other	Information Technology Specialist	15-1099	Computer Specialists, All Other
			Supervisory Information Technology Specialist	*1st –level:* 15-1099 *2nd –level & above:* 11-3021	Computer Specialists, All Other Computer and Information Systems Managers
			Information Technology Specialist (Customer Support)	15-1041	Computer Support Specialists
			Supervisory Information Technology Specialist (Customer Support)	*1st –level:* 15-1041 *2nd –level & above:* 11-3021	Computer Support Specialists Computer and Information Systems Managers
			Information Technology Specialist (Applications Software)	15-1031	Computer Software Engineers, Applications
			Supervisory Information Technology Specialist (Applications Software)	*1st –level:* 15-1031 *2nd –level & above:* 11-3021	Computer Software Engineers, Application Computer and Information Systems Managers

(continued)

Crosswalk to the Standard Occupational Classification (CONTINUED)

Occupational Series	Standard Occupational Classification Code Based on Occupational Series		Position Title	Standard Occupational Classification Code Based on Position Title	
Information Technology Management, GS-2210	15-1099	Computer Specialists, All Other	Information Technology Specialist (Data Management)	15-1061	Database Administrator
			Supervisory Information Technology Specialist (Data Management)	*1st–level:* 15-1061 *2nd –level & above:* 11-3021	Database Administrator Computer and Information Systems Managers
			Information Technology Specialist (Internet)	15-1099	Computer Specialists, All Other
			Supervisory Information Technology Specialist (Internet)	*1st –level:* 15-1099 *2nd –level & above:* 11-3021	Computer Specialists, All Other Computer and Information Systems Managers
			Information Technology Specialist (Network Services)	15-1081	Network Systems and Data Communications Analysts
			Supervisory Information Technology Specialist (Network Services)	*1st–level:* 15-1081 *2nd –level & above:* 11-3021	Network Systems and Data Communications Analysts Computer and Information Systems Managers
Information Technology Management, GS-2210	15-1099	Computer Specialists, All Other	Information Technology Specialist (Operating Systems)	15-1032	Computer Software Engineers, Systems Software
			Supervisory Information Technology Specialist (Operating Systems)	*1st–level:* 15-1032 *2nd –level & above:* 11-3021	Computer Software Engineers, Systems Software Computer and Information Systems Managers

(continued)

Crosswalk to the Standard Occupational Classification (CONTINUED)

Occupational Series	Standard Occupational Classification Code Based on Occupational Series		Position Title	Standard Occupational Classification Code Based on Position Title	
			Information Technology Specialist (Policy and Planning)	15-1099	Computer Specialists, All Other
			Supervisory Information Technology Specialist (Policy and Planning)	*1st–level:* 15-1099 *2nd –level & above:* 11-3021	Computer Specialists, All Other Computer and Information Systems Managers
			Information Technology Specialist (Security)	15-1071	Network and Computer Systems Administrators
			Supervisory Information Technology Specialist (Security)	*1st –level:* 15-1071 *2nd –level & above:* 11-3021	Network and Computer Systems Administrators Computer and Information Systems Managers
			Information Technology Specialist (Systems Administration)	15-1071	Network and Computer Systems Administrators
			Supervisory Information Technology Specialist (Systems Administration)	*1st –level*: 15-1071 *2nd –level & above*: 11-3021	Network and Computer Systems Administrators Computer and Information Systems Managers
Information Technology Management, GS-2210	15-1099	Computer Specialists, All Other	Information Technology Specialist (Systems Analysis)	15-1051	Computer Systems Analysts
			Supervisory Information Technology Specialist (Systems Analysis)	*1st–llevel:* 15-1051 *2nd –level & above:* 11-3021	Computer Systems Analysts Computer and Information Systems Managers

EXCLUSIONS

Although some positions may include work requiring information technology knowledge and skills, classification to the Information Technology Group, GS-2200 may not be appropriate. The following table provides examples of situations where the work may involve the application of related knowledge and skill, but not to the extent that it warrants classification to this job family.

NOTE: In the table below, the abbreviation for job family standard is JFS.

If….	See This Group, Standard or Series Definition:
1. Work involves knowledge of a specific subject-matter field(s); (e.g., human resources management, inventory management) as the paramount requirement even when performing information technology assignments. (See **DISTINCTIONS BETWEEN INFORMATION TECHNOLOGY WORKERS AND INFORMATION TECHNOLOGY USERS**.)	JFS for Administrative Work in the Human Resources Management Group, GS-0200 GS-0301, Miscellaneous Administration and Program GS-2010, Inventory Management
2. Work involves full professional qualifications in mathematics, engineering, physics, or related fields as the paramount requirement in performing information technology assignments.	GS-0400, Biological Sciences Group GS-0800, Engineering and Architecture Group JFS for Professional Work in the Physical Sciences Group, GS-1300P GS-1500, Mathematics and Statistics Group
3. Work involves knowledge of fundamentals and principles of professional engineering; computer hardware, systems, software, and computer systems architecture and integration; and mathematics.	GS-0854, Computer Engineering
4. Work requires professional knowledge of theoretical foundations of computer science; specialized knowledge of design characteristics, limitations, and potential applications of information systems; and, knowledge of relevant mathematical and statistical sciences.	GS-1550, Computer Science

(continued)

EXCLUSIONS (continued)

If….	See This Group, Standard or Series Definition:
5. Work involves operating or supervising the operation of computer systems, including the operation of peripheral equipment, that requires knowledge of functions and features of computer systems and skill in reading, interpreting, and correctly responding to information transmitted through computer systems. (See discussion in **DISTINCTIONS BETWEEN ADMINISTRATIVE WORK AND ASSISTANCE WORK**.)	GS-0332, Computer Operation
6. Work involves performance or supervision of computer support and services functions that requires knowledge of systems processing sequences, controls, procedures, or user and programming languages. (See discussion in **DISTINCTIONS BETWEEN ADMINISTRATIVE WORK AND ASSISTANCE WORK**.)	GS-0335, Computer Clerk and Assistant
7. Work involves the planning, development, acquisition, testing, integration, installation, utilization, or modification of telecommunications systems, facilities, services, and procedures that requires primary knowledge of communications theories, principles, concepts, and practices.	GS-0391, Telecommunications
8. Work involves skill in the use of personal computers and knowledge of specialized and/or general office software to provide administrative support.	GS-0300, General Administration, Clerical, and Office Services Group, GS-0303, Miscellaneous Clerk and Assistant GS-0318, Secretary
9. Work involves knowledge of investigative techniques, rules of evidence, and Federal laws and statutes as the paramount requirement in the investigation of computer and Internet related crimes.	GS-1811, Criminal Investigating
10. Work involves knowledge of security concepts, methods, practices, and procedures as the paramount requirement to develop, evaluate, interpret, and maintain policies and procedures to safeguard operations, information, data, and material from unauthorized disclosure, theft, loss, or sabotage.	GS-0080, Security Administration
11. Work involves the collection, organization, preservation, and retrieval of recorded knowledge that requires full professional knowledge of the theories, principles, and techniques of library science as the paramount requirement.	GS-1410, Librarian

(continued)

EXCLUSIONS (continued)

If….	See This Group, Standard or Series Definition:
12. Work involves developing, coordinating, processing, and transmitting specialized information requiring knowledge of one or more scientific, engineering, technical, or other fields and practical knowledge of techniques for organizing, accessing, or disseminating information.	GS-1412, Technical Information Services
13. Work involves preparing and updating subject matter information on an organization's Web site using markup languages that does not require paramount knowledge of IT principles, concepts, and methods.	Appropriate subject matter series.
14. Work involves analytical ability combined with knowledge and application of quality assurance methods, principles and practices and knowledge of computer software characteristics and the associated manufacturing processes and techniques.	GS-1910, Quality Assurance
15. Work involves designing new automated financial accounting systems or developing modifications to existing systems that requires application of accounting theories, concepts, principles, and standards.	JFS for Professional and Administrative Work in the Accounting and Budget Group, GS-0500
16. Work involves communicating information through visual means that requires knowledge of and ability to apply the principles of visual design and the ability to present subject matter information in a visual form.	GS-1084, Visual Information
17. Work involves substantive knowledge of agency programs and activities; agency mission, policies, and objectives; management principles and processes; analytical and evaluative methods; and an understanding of basic information technology principles and techniques as they relate to the evaluation of government programs and operations.	GS-0343, Management and Program Analysis

HOW TO USE THIS STANDARD

Evaluate positions on a factor-by-factor basis using the factor level descriptions (FLDs) provided in this standard. Compare each factor in the position description to the appropriate FLDs and/or illustrations in the standard. If the factor information in the position description fully matches an FLD for the series and specialties in the standard, you may assign the level without reviewing the illustrations. FLDs are progressive or cumulative in nature. For example, each FLD for Factor 1 – Knowledge Required by the Position encompasses the knowledge and skills identified at the previous level. Use only designated point values. Record the results of your analysis on the Position Evaluation Summary form on the next page. Convert total points for all factors to grade levels using the grade conversion table that follows the FLDs.

This standard provides specialty-specific illustrations as a frame of reference for applying factor level concepts. Do not rely solely on the illustrations in evaluating positions, because they reflect a limited range of actual work examples. The level of work described in some illustrations may be higher than the threshold for a particular factor level. Use the illustrations to gain insights into the meaning of the grading criteria in the FLDs. If the factor information in the position description you are evaluating fails to fully match a relevant illustration, but does fully match the FLD, you may still assign the level.

The FLDs in this standard cover nonsupervisory positions at grades GS-5 through GS-15. Evaluate supervisory and leader positions by applying the appropriate guide.

You will find more complete instructions for evaluating positions in the following OPM publications: **Introduction to the Position Classification Standards** and **The Classifier's Handbook.**

POSITION EVALUATION SUMMARY

Organization _____

Position # _____

Evaluation Factors Standards Used	Factor Level Used (FL#, etc.)	Points Assigned	Comments
1. Knowledge Required by the Position			
2. Supervisory Controls			
3. Guidelines			
4. Complexity			
5. Scope and Effect			
6/7. Personal Contacts and Purpose of Contacts			
8. Physical Demands			
9. Work Environment			
SUMMARY **Total Points**			
Grade Conversion			

Additional Remarks:

Title, Series, and Grade Assigned:

_____

Date: _____

Agencies may copy for local use.

FACTOR LEVEL DESCRIPTIONS

FACTOR 1 – KNOWLEDGE REQUIRED BY THE POSITION

Factor 1 measures the nature and extent of information or facts that an employee must understand to do acceptable work (e.g., steps, procedures, practices, rules, policies, theories, principles, and concepts) and the nature and extent of the skills necessary to apply that knowledge. You should only select a factor level under this factor when the knowledge described is required and applied.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 1 illustrations are located in Appendix F1.

Level 1-5	750 Points
Series	**Information Technology Management, GS-2210**
Specialties	**Information Technology Specialist** **(Applications Development)** **(Operating Systems)** **(Customer Support)** **(Policy and Planning)** **(Data Management)** **(Security)** **(Internet)** **(Systems Administration)** **(Network Services)** **(Systems Analysis)**
FLD	Knowledge of basic information technology principles and practices sufficient to: • perform highly structured, entry-level work designed to develop broader and more in-depth knowledge and skill to perform higher-level assignments; • communicate factual and procedural information clearly, orally and in writing; and • gather and analyze basic facts and draw conclusions.

Level 1-6	950 Points
Series	**Information Technology Management, GS-2210**
FLD	**Knowledge common to all specialties:** Knowledge of, and skill in applying,: • IT principles, methods, and practices in the assigned specialty area; • IT systems development life cycle management concepts; • performance monitoring principles and methods; • quality assurance principles; • technical documentation methods and procedures; • systems security methods and procedures; • analytical methods; and • oral and written communication skills sufficient to: • perform routine and recurring assignments in the specialty area; • identify and resolve issues and problems; • prepare and update manuals, instructions, and operating procedures; • provide information and assistance to customers; • evaluate established methods and procedures and prepare recommendations for changes in methods and practices where appropriate; and • ensure the application of appropriate security measures to the assignment. **(continued)**

Level 1-6 (continued)	950 Points
Specialty	**(Customer Support)** Illustration(s)
FLD	Knowledge of and skill in applying: • customer service and customer support principles and methods; • systems installed in customer organizations; • training methods; and • knowledge-based applications sufficient to: • participate in the planning and delivery of a full range of customer support services to the organization; • install, configure, upgrade, and troubleshoot any hardware and software components; • present formal and informal training and assistance to customers; and • report, respond to, and resolve customer requests.
Specialty	**(Data Management)** Illustration(s)
FLD	Knowledge of, and skill in applying: • backup and recovery procedures; • operating systems and platforms used in customer organizations; and • commonly used query languages, such as SQL sufficient to: • maintain database operations; • assist in returning disrupted database systems to normal operations; and • create reports and manipulate data in response to customer requirements. **(continued)**

Level 1-6 (continued) 950 Points

Specialty

(Internet) Illustration(s)

FLD

Knowledge of, and skill in applying:

- Internet design principles and methods;
- standard graphics mark-up languages; programming languages and tools;
- standard software validation tools;
- basic Internet server maintenance techniques;
- file formats used in the delivery of Web content;
- Internet clients, such as browsers and streaming audio; and
- the technical requirements of graphical, text, and voice-based browsers

sufficient to:

- provide Internet services such as Web sites and file transfer protocol sites;
- convert user-developed content into workable Web pages;
- create basic scripts or code;
- evaluate code and repair errors;
- carry out server maintenance functions;
- select and apply the most effective delivery formats;
- create easily navigable Web pages; and
- ensure that Web-based content is accessible to all users.

Specialty

(Network Services) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- network standards, protocols, and procedures;
- capabilities and applications of network equipment including hubs, routers, switches, bridges, servers, transmission media and related hardware;
- the organization's network architecture and infrastructure;
- local area and wide area networking principles and concepts including bandwidth management

sufficient to:

- assist in the development, configuration, installation, and maintenance of networked systems including local area networks (LANs) and wide area networks (WANs); and
- perform routine network configuration management functions.

(continued)

Level 1-6 (continued) 950 Points

Specialty

(Policy and Planning) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- the organization's mission; and
- program management principles

sufficient to:

- participate in the development of IT goals, objectives, plans, and policies.

Specialty

(Operating Systems) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- operating systems installation and configuration procedures; and
- the organization's operational environment

sufficient to:

- to install, configure, and maintain operating systems components; and
- install updates and temporary fixes to existing programs.

(continued)

Level 1-6 (continued)	950 Points
Specialty	**(Systems Administration)** **Illustration(s)**
FLD	Knowledge of, and skill in applying: • systems administration methods and procedures; • software distribution tools and mechanisms; and • data recovery tools and techniques sufficient to: • monitor and troubleshoot systems availability; • recover data in the event of hardware or software failure; and • ensure customers receive current versions of supported software as they become available.
Specialty	**(Systems Analysis)** **Illustration(s)**
FLD	Knowledge of, and skill in applying systems analysis principles and methods sufficient to: • assist in identifying and specifying business requirements for new or enhanced systems; and • develop basic system specifications.

Level 1-7 — 1250 Points

Series

Information Technology Management, GS-2210

Knowledge common to all specialties:

Knowledge of, and skill in applying:

- IT concepts, principles, methods, and practices;
- the mission and programs of customer organizations;
- the organization's IT infrastructure;
- performance management/measurement methods, tools, and techniques;
- systems testing and evaluation principles, methods, and tools;
- IT security principles and methods;
- requirement analysis principles and methods;
- commercial off-the-shelf (COTS) software and components;
- Internet technologies to analyze the Internet potential of systems, networks, and data;
- new and emerging information technologies and/or industry trends;
- acquisition management policies and procedures;
- cost-benefit analysis principles and methods;
- analytical methods and practices;
- project management principles and methods; and
- oral and written communication skill

FLD

sufficient to:

- plan and carry out difficult and complex assignments and develop new methods, approaches, and procedures;
- provide advice and guidance on a wide range and variety of complex IT issues;
- interpret IT policies, standards, and guidelines;
- conduct analyses and recommend resolution of complex issues affecting the specialty area;
- evaluate and recommend adoption of new or enhanced approaches to delivering IT services;
- test and optimize the functionality of systems, networks, and data;
- identify and define business or technical requirements applied to the design, development, implementation, management, and support of systems and networks;
- ensure optimal use of commercially available products;
- evaluate proposals for the acquisition of IT products or services;
- prepare and present reports;
- represent the organization in interactions with other organizations; and
- provide technical leadership on group projects.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

(Applications Software) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- software design principles, methods, and approaches;
- principles, methods, and procedures for designing, developing, optimizing, and integrating new and/or reusable systems components;
- pertinent government regulations, such as the Americans with Disabilities Act;
- infrastructure requirements, such as bandwidth and server sizing; and
- database management principles and methodologies, including data structures, data modeling, data warehousing, and transaction processing

sufficient to:

- design, write, test, debug, and maintain software applications that meet technical and functional requirements;
- design and develop efficient and effective applications through optimal use of reusable components;
- ensure applications comply with regulatory requirements; and
- ensure applications are consistent with the current and planned infrastructure and data environments.

Specialty

(Customer Support) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- a wide variety of applications, operating systems, protocols, and equipment used in customer organizations; and
- methods and practices for troubleshooting, recovering, adjusting, modifying, and improving IT systems

sufficient to:

- provide advice and assistance to customers;
- troubleshoot complex problems;
- provide support in a manner that minimizes interruptions in customers' ability to carry out critical business activities.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

(Data Management) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- database management concepts, principles, and methods including database logical and physical design, normalization, storage capacity management, and backup and recovery;
- sources, characteristics, and uses of the organization's data assets;
- database management systems, query languages, table relationships, and views;
- data mining and data warehousing principles;
- the characteristics of physical and virtual data storage media; and
- data administration and data standardization policies and standards

sufficient to:

- design, develop, and maintain data management systems that meet current and future business requirements of the organization and its customers;
- design, develop, and maintain databases;
- monitor and optimize database performance and tune database operations;
- generate complex queries and reports;
- participate in the design of data mining and data warehousing systems;
- define and allocate storage capacity in the design of data management systems; and
- develop data dictionaries, data models, metadata repositories, and other data management tools.

Specialty

(Internet) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- current Internet technologies;
- standard Internet protocols, such as Telecommunication Control Protocol/Internet Protocol (TCP/IP);
- Internet server operations and operating systems;
- Internet security principles and protocols, such as Security Sockets Layer (SSL) and encryption;
- usability concepts, i.e. navigational aids, site architecture, knowledge management, and information rendering;
- Web-based application and accessibility technologies, such as voice recognition and screen readers;
- U.S. copyright laws;
- accessibility factors and standards;
- database management principles and methods; and
- programming and scripting languages

sufficient to:

- provide guidance in determining the most appropriate methods for delivering information via the Internet;
- create Internet applications that enhance user-developed content and meet business and technical requirements;
- design and develop Internet applications;
- deliver e-commerce and e-Government products and services to internal and external audiences;
- provide Internet services that optimize customer experiences;
- create Web pages that enable all potential users to access information contained on the Web pages;
- advise Web site content providers in the appropriate use of copyrighted electronic property on Web sites;
- ensure Internet services comply with the Americans with Disabilities Act and other related requirements;
- build and implement Web-enabled database applications; and
- manage Internet servers.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

(Network Services) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- network systems design, development, testing, installation, operations, management, and maintenance concepts and methods; and
- the organization's network architecture, topology, and protocols

sufficient to:

- provide network services that support business requirements; and
- plan, design, develop, and integrate network systems consistent with existing or planned network infrastructures.

Specialty

(Operating Systems) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- software design principles and methods; and
- functionality and operability of the current operating environment

sufficient to:

- ensure high reliability and optimal availability of applications;
- develop solutions to complex operational problems; and
- evaluate the feasibility of implementing new technologies with current environments.

Specialty

(Policy and Planning) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- the organization's policy and planning formulation process;
- capital investment planning principles and methods;
- the organization's enterprise IT goals and objectives; and
- IT metrics methods and concepts

sufficient to:

- draft IT policies and plans;
- participate in the IT capital planning process; and
- develop and monitor metrics used in evaluating the accomplishment of IT goals and objectives.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

(Security) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- methods for evaluating, implementing, and disseminating IT security tools and procedures;
- IT security certification and accreditation requirements;
- network operations and protocols; and
- computer forensics principles

sufficient to:

- develop, implement, and coordinate activities designed to ensure, protect, and restore IT systems, services, and capabilities;
- monitor and evaluate systems' compliance with IT security requirements;
- provide advice and guidance in implementing of IT security policies and procedures in the development and operation of network systems; and
- ensure proper protection of evidence used in investigating computer crimes.

Specialty

(Systems Administration) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- principles and methods for the integration of information system components;
- performance tuning tools and techniques; and
- systems diagnostic tools and fault identification techniques

sufficient to:

- install and maintain software and hardware, control current versions and future releases of applications software, and document the physical configuration of an information system;
- optimize the functionality of networks and systems; and
- diagnose and recover failed systems.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

(Systems Analysis) **Illustration(s)**

FLD

Knowledge of, and skill in applying:

- systems design tools, methods, and techniques, including automated systems analysis and design tools;
- systems design standards, policies, and authorized approaches;
- systems design precedents or alternative approaches;
- structured analysis principles and methods; and
- business processes and operations of customer organizations

sufficient to:

- develop requirements and specifications for systems that meet business requirements;
- advise on the merits of proposed systems development projects; and
- apply a structured systems analysis approach to the design and development of new or enhanced applications.

Level 1-8 — 1550 Points

Series

Information Technology Management, GS-2210

Knowledge common to all specialties:

Mastery of and skill in applying:

- advanced IT principles, concepts, methods, standards, and practices

sufficient to:

- develop and interpret policies, procedures, and strategies governing the planning and delivery of services throughout the agency;
- provide expert technical advice, guidance, and recommendations to management and other technical specialists on critical IT issues;
- apply new developments to previously unsolvable problems; and
- make decisions or recommendations that significantly influence important agency IT policies or programs.

Knowledge of, and skill in applying:

FLD

- interrelationships of multiple IT specialties;
- the agency's IT architecture;
- new IT developments and applications (hardware, software, telecommunications);
- emerging technologies and their applications to business processes;
- IT security concepts, standards, and methods;
- project management principles, methods, and practices including developing plans and schedules, estimating resource requirements, defining milestones and deliverables, monitoring activities, and evaluating and reporting on accomplishments; and
- oral and written communication skill

sufficient to:

- ensure the integration of IT programs and services and to develop solutions to integration/interoperability issues;
- design, develop, and manage systems that meet current and future business requirements and apply and extend, enhance, or optimize the existing architecture;
- manage assigned projects;
- communicate complex technical requirements to non-technical personnel; and
- prepare and present briefings to senior management officials on complex/controversial issues.

(continued)

Level 1-8 (continued) 1550 Points

Specialty FLD	**(Applications Software)** **Illustration(s)** Knowledge of, and skill in applying, systems engineering concepts and factors, such as structured design, supportability, survivability, reliability, scalability, and maintainability, sufficient to ensure that applications are optimized for state-of-the-art technology and functionality.
Specialty FLD	**(Customer Support)** **Illustration(s)** Knowledge of and skill in applying: • IT problem management methods and practices; and • new and innovative customer support methods and technologies sufficient to: • plan, implement, and manage problem management systems designed to effectively recognize, report, track, and resolve problems; and • evaluate the feasibility of adapting new methods to enhance customer satisfaction.
Specialty FLD	**(Data Management)** **Illustration(s)** Knowledge of, and skill in applying: • data mining, data storage, and data warehousing concepts, methods, and technology; • data modeling methodologies; and • database management systems, operating systems, technical architecture, and network topology sufficient to: • apply and adapt new and improved approaches to the design, development, and implementation of data mining, data warehousing, and related data storage and retrieval systems; • develop guidelines for the application of data modeling practices to the development of data management applications; • diagnose and resolve the most complex data management problems and issues.

(continued)

Level 1-8 (continued) 1550 Points

Specialty	**(Internet)** **Illustration(s)**
FLD	Knowledge of, and skill in applying: • Internet services architecture; • advancing Internet technologies; and • the organization's strategic business plans sufficient to: • develop, implement, and interpret guidelines used by others involved in Internet services design, development, and delivery; and • formulate a vision that anticipates future requirements and capabilities for the agency's Internet services.
Specialty	**(Network Services)** **Illustration(s)**
FLD	Knowledge of, and skill in applying: • network systems management methods including end-to-end systems performance monitoring; • network architecture and topology, including transmissions protocols, broadcasting, switching, control, and management; and • the organization's network architecture and available resources sufficient to: • plan, design, develop, manage, and enhance highly efficient network systems that respond to the organization's business requirements; and • leverage available resources.
Specialty	**(Operating Systems)** **Illustration(s)**
FLD	Knowledge of, and skill in applying: • systems engineering concepts and methods; • optimization concepts and methods; and • software design theories and concepts sufficient to develop policies, procedures, and strategies that ensure optimization and integration in the installation, configuration, and maintenance of the operating environment.

(continued)

Level 1-8 (continued) 1550 Points

Specialty FLD	**(Policy and Planning)** **Illustration(s)** Knowledge of, and skill in applying: • the business value of information; • methods and approaches for sharing information through the use of information technology assets; • capital planning regulations and policies, such as the Clinger-Cohen Act, as applied to the organization's business requirements; • performance measurement tools; and • methods for identifying and resolving IT work force issues sufficient to: • develop knowledge management program plans, policies, and standards; • provide input to the IT capital planning process; • develop, implement, and interpret metrics for the evaluation of IT program effectiveness and efficiency; and • leverage human resources in the accomplishment of mission requirements.
Specialty FLD	**(Security)** **Illustration(s)** Knowledge of, and skill in applying: • total infrastructure protection environment; • systems security certification and accreditation requirements and processes; and • Federal information systems security community and hierarchy sufficient to: • integrate information systems security with other security disciplines; • certify systems or network accreditation; and • ensure coordination and/or collaboration on security activities. **(continued)**

Level 1-8 (continued) 1550 Points

Specialty FLD	**(Systems Administration)** **Illustration(s)** Knowledge of, and skill in applying: • modeling and simulation tools and techniques; and • capacity management principles, concepts, and tools sufficient to: • plan and conduct simulations to determine capacity requirements; and • recommend hardware/software replacements or upgrades to meet current and future requirements.
Specialty FLD	**(Systems Analysis)** **Illustration(s)** Knowledge of, and skill in applying, business process engineering concepts and methods sufficient to lead/conduct studies designed to identify potential improvements in the way IT is applied to key business functions.

Level 1-9 — 1850 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist			
(Applications Development)	**Illustration(s)**	**(Operating Systems)**	
(Customer Support)		**(Policy and Planning)**	**Illustration(s)**
(Data Management)		**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	
(Network Services)		**(Systems Analysis)**	

FLD

Knowledge common to all specialties: Mastery of IT theories, principles, concepts, standards, and practices sufficient to:

- generate new concepts, principles, and methods in the specialty area(s);

OR

- plan and direct IT programs of national or international scope where no precedents exist. Characteristics of such programs include the following:
  - uncertainties involving the legislation, authorities, and scope of the program resulting from intense Congressional interest;
  - unprecedented factual issues (e.g., stemming from the newness or scope and complexity of the program, unprecedented departure from previous practices, or intergovernmental requirements) which require the creation of new and innovative concepts or principles;
  - the need for top agency management officials' continued involvement to balance conflicting interests of extreme intensity (e.g., those resulting from the undetermined potential for future applications of the program's product or results, or from public and political controversy that results in the formation of special interest or lobbying groups, or from considerable attention by the national news media that could affect the program's continuation); and
  - an effect on the economic welfare of a major industry whose position, in turn, affects the health and stability of the general economy, or significantly affects foreign economies.

- serve as senior expert and consultant to top agency management officials to advise on integrating IT programs with other programs of equivalent scope and complexity; and

- advise other IT experts throughout the agency or other agencies on issues that involve applying or adapting new methods, standards, or practices, that are developed by the employee or as a result of the employee's leadership, to a variety of situations.

FACTOR 2 – SUPERVISORY CONTROLS

This factor covers the nature and extent of direct or indirect controls exercised by the supervisor or another individual over the work performed, the employee's responsibility, and the review of completed work. The supervisor determines how much information the employee needs to perform the assignments; e.g., instructions, priorities, deadlines, objectives, and boundaries. The employee's responsibility depends on the extent to which the supervisor expects the employee to develop the sequence and timing of the various aspects of the work, to modify or recommend modification of instructions, and to participate in establishing priorities and defining objectives. The degree of review of completed work depends upon the nature and extent of the review; e.g., close and detailed review of each phase of the assignment; detailed review of the completed assignment; spot check of finished work for accuracy; or review only for adherence to policy. The primary components of this factor are: **How Work Is Assigned, Employee Responsibility,** and **How Work Is Reviewed**.

NOTE: In the tables below, factor level description is abbreviated as FLD.

Level 2-1	**25 Points**
Series	**Information Technology Management, GS-2210**
FLD	**How Work Is Assigned** – The supervisor or designated employee instructs the employee on what to do, the methods to use, what to look for, and what to bring to the supervisor's or designated employee's attention. When assigning developmental tasks, or tasks involving the use of new formats, methods, or procedures, the supervisor or designated employee typically provides detailed and specific instructions. **Employee Responsibility** – The employee: • performs work as instructed; • consults with the supervisor or designated employee when clarification of instructions is necessary; and • receives guidance on problems and work methods not specifically covered by the original instructions. **How Work Is Reviewed** – The supervisor or designated employee reviews work while in progress and upon completion to see that the employee followed directions and the results are complete and accurate.

Level 2-2 — 125 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor instructs the employee on the purpose of the assignment and its scope, limitations, expected deadlines, and priorities. The supervisor also advises the employee on peculiarities of new assignments.

Employee Responsibility – The employee:

- works independently, but within the framework the supervisor established and in conformance with established practices and prescribed procedures; and
- refers problems not covered by the supervisor's instructions or guides to the supervisor for help or a decision.

How Work Is Reviewed – The supervisor:

- reviews completed work closely to verify accuracy and conformance to required procedures and any special instructions;
- reviews findings and conclusions to ensure they are supported by facts; and
- typically reviews in detail the more difficult work of a type the employee has not previously done.

Level 2-3 — 275 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor outlines or discusses possible problem areas and defines objectives, plans, priorities, and deadlines. Assignments have clear precedents requiring successive steps in planning and execution.

Employee Responsibility – The employee:

- independently plans and carries out the assignments in conformance with accepted policies and practices;
- adheres to instructions, policies, and guidelines in exercising judgment to resolve commonly encountered work problems and deviations; and
- brings controversial information or findings to the supervisor's attention for direction.

How Work Is Reviewed – The supervisor:

- provides assistance on controversial or unusual situations that do not have clear precedents;
- reviews completed work for conformity with policy, the effectiveness of the employee's approach to the problem, technical soundness, and adherence to deadlines; and
- does not usually review in detail the methods used to complete the assignment.

Level 2-4 — 450 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor outlines overall objectives and available resources. The employee and supervisor, in consultation, discuss timeframes, scope of the assignment including possible stages, and possible approaches.

Employee Responsibility – The employee:

- determines the most appropriate principles, practices, and methods to apply in all phases of assignments, including the approach to be taken, degree of intensity, and depth of research in management advisories;
- frequently interprets regulations on his/her own initiative, applies new methods to resolve complex and/or intricate, controversial, or unprecedented issues and problems, and resolves most of the conflicts that arise; and
- keeps the supervisor informed of progress and of potentially controversial matters.

How Work Is Reviewed – The supervisor reviews completed work for soundness of overall approach, effectiveness in meeting requirements or producing expected results, the feasibility of recommendations, and adherence to requirements. The supervisor does not usually review methods used.

Level 2-5 — 650 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor provides administrative and policy direction in terms of broadly defined missions or functions of the organization.

Employee Responsibility – The employee:

- is responsible for a significant program or function;
- defines objectives;
- interprets policies promulgated by authorities senior to the immediate supervisor and determines their effect on program needs;
- independently plans, designs, and carries out the work to be done; and
- is a technical authority.

How Work Is Reviewed – The supervisor:

- reviews work for potential impact on broad agency policy objectives and program goals;
- normally accepts work as being technically authoritative; and
- normally accepts work without significant change.

FACTOR 3 – GUIDELINES

This factor covers the nature of guidelines and the judgment employees need to apply them. Individual assignments may vary in the specificity, applicability, and availability of guidelines; thus, the judgment that employees use similarly varies. The existence of detailed plans and other instructions may make innovation in planning and conducting work unnecessary or undesirable. However, in the absence of guidance provided by prior agency experience with the task at hand or when objectives are broadly stated, the employee may use considerable judgment in developing an approach or planning the work. Here are examples of guidelines used in administrative work in the Information Technology Management Group:

Policies and Guidance – Several policy and guidance statements influence and direct how the Government manages its information resources. These guides include:

- Executive Order 13011, "Federal Information Technology," highlights the need for executive agencies to significantly improve the management of their information systems, by implementing the relevant provisions of the Paperwork Reduction Act (PRA), the Clinger-Cohen Act, and the Government Performance and Results Act (GPRA).
- Presidential Decision Directive 63, "Critical Infrastructure Protection," establishes policies to reduce the cyber and physical infrastructure vulnerabilities of the Federal government.
- Office of Management and Budget (OMB) Circulars:
  - A-11, "Preparing and Submitting Budget Estimates," provides detailed instruction and guidance on the preparation and submission of agency budget requests and related materials, including program performance information.
  - "Management of Federal Information Resources 130," establishes policy for the management of Federal information resources and procedural and analytic guidelines for implementing specific aspects of these policies.
  - A-94, "Guidelines and Discount Rates for Benefit Cost Analysis of Federal Programs," provides general guidance for conducting cost-benefit and cost-effectiveness analyses and specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time.
- OMB Memorandum M-97-02 (Raines' Rules), "Funding Information Systems Investments," establishes eight decision criteria that OMB began using in the FY 1998 budget proposals, to evaluate major information system investments proposed for submission in the President's budget.
- OMB Capital Programming Guide, provides professionals in the Federal Government a basic reference on principles and techniques for planning, budgeting, procurement, and management of capital assets

Legislation – Several legislative acts influence and direct how the Government manages its information resources. These legislative acts include:

- Information Technology Management Reform Act (ITMRA, also referred to as the Clinger-Cohen Act) – requires Federal agencies to focus more on the results achieved through IT investments while streamlining the Federal IT procurement process.

- Computer Security Act of 1987 – (a) IN GENERAL establishes minimum acceptable security practices that improve the security and privacy of sensitive information in Federal computer systems.
- Government Performance and Results Act (GPRA) – requires agencies to set goals, measure performance, and report on their accomplishments. As such, an agency's IT investments should directly support the accomplishment of these goals.
- Federal Acquisition Streamlining Act (FASA) – requires agencies to define cost, schedule, and performance goals for Federal acquisition programs (to include IT projects) and monitor these programs to ensure that they remain within prescribed tolerances.
- Federal Acquisition Reform Act (FARA) – requires the head of each executive agency, after consultation with the administrator for Federal Procurement Policy, to establish policies and procedures for the effective management (including accession, education, training, career development, and performance incentives) of the acquisition workforce of the agency.
- Paperwork Reduction Act (PRA) – requires agencies to minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, Federal contractors, State, local and tribal governments, and other persons resulting from the collection of information by or for the Federal Government.
- Government Paperwork Elimination Act (GPEA) – requires OMB to include alternative information technologies that provide for electronic submission, maintenance, or disclosure of information as a substitute for paper and for the use and acceptance of electronic signatures. It also directs OMB to set procedures for use and acceptance of electronic signatures by Federal agencies and to develop procedures to permit private employers to store, and to file electronically with Federal agencies, forms pertaining to their employees.

- Agency regulations, standard procedures, and established practices governing program operations.
- User manuals for hardware and software, installation guides, online references, and workbooks covering daily equipment operations.
- Specialized dictionaries and models

Do not confuse guidelines with the knowledge described under Factor 1– Knowledge Required by the Position. Guidelines either provide reference data or impose certain constraints on applications. For example, in some of the functional areas covered by this standard, there may be several generally accepted methods of accomplishing work, perhaps set forth in an agency operating manual. However, in a particular office, the policy may be to use only one of those methods; or the policy may state specifically under what conditions the office may use each method. The primary components of this factor are: **Guidelines Used** and **Judgment Needed**.

NOTE: In the tables below, factor level description is abbreviated as FLD.

Level 3-1	25 Points
Series	**Information Technology Management, GS-2210 (All Specialties)**
FLD	**Guidelines Used** – The employee uses specific and detailed guidelines that cover all aspects of the work. **Judgment Needed** – The employee works in strict adherence to available guidelines, which require little or no judgment. The supervisor or designated employee must authorize any deviations from the guidelines.

Level 3-2	125 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses a number of guidelines that are directly applicable to the assignment. Guidelines prescribe established procedures and techniques and provide clear precedents. **Judgment Needed** – The employee: • uses judgment in selecting and applying the most appropriate guidelines; • determines the appropriateness and applicability of any minor deviations within existing guidelines; and • refers to the supervisor situations to which the existing guidelines cannot be applied or require significant deviations.

Level 3-3	275 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses a wide variety of reference materials and manuals; however, they are not always directly applicable to issues and problems or have gaps in specificity. Precedents are available outlining the preferred approach to more general problems or issues. **Judgment Needed** – The employee uses judgment in researching, choosing, interpreting, modifying, and applying available guidelines for adaptation to specific problems or issues.

Level 3-4 — 450 Points

Series

Information Technology Management, GS-2210

FLD

Guidelines Used – The employee uses guidelines and precedents that are very general regarding agency policy statements and objectives. Guidelines specific to assignments are often scarce, inapplicable or have gaps in specificity that require considerable interpretation and/or adaptation for application to issues and problems.

Judgment Needed – The employee uses judgment, initiative, and resourcefulness in deviating from established methods to:

- modify, adapt, and/or refine broader guidelines to resolve specific complex and/or intricate issues and problems;
- treat specific issues or problems;
- research trends and patterns;
- develop new methods and criteria; and/or
- propose new policies and practices.

Level 3-5 — 650 Points

Series

Information Technology Management, GS-2210

FLD

Guidelines Used – The employee uses guidelines that are often ambiguous and express conflicting or incompatible goals and objectives, requiring extensive interpretation.

Judgment Needed – The employee uses judgment and ingenuity and exercises broad latitude to:

- determine the intent of applicable guidelines;
- develop policy and guidelines for specific areas of work; and
- formulate interpretations that may take the form of policy statements and guidelines.

Top agency management officials and senior staff recognize the employee as a technical expert.

FACTOR 4 – COMPLEXITY

This factor covers the nature, number, variety, and intricacy of tasks, steps, processes, or methods in the work performed; the difficulty in identifying what needs to be done; and the difficulty and originality involved in performing the work. The underlying concepts of this factor are**: Nature of Assignment, What Needs To Be Done,** and **Difficulty and Originality Involved**.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 4 illustrations are located in Appendix F4.

Level 4-2 — 75 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**

FLD

Nature of the Assignment – The work consists of duties involving related steps, processes, or methods.

What Needs To Be Done – The employee decides what needs to be done by choosing from various alternatives, recognizing differences among a few easily distinguishable situations.

Difficulty and Originality Involved – The employee exercises judgment regarding the most appropriate approach that is in accordance with established procedures and practices.

Level 4-3 — 150 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**

FLD

Nature of the Assignment – The work consists of various duties that involve applying different and unrelated processes and methods.

What Needs To Be Done – The employee decides what needs to be done based on analyses of the subjects and issues related to the assignment and selects appropriate courses of action from many acceptable alternatives.

Difficulty and Originality Involved – The employee identifies and analyzes important factors and conditions in order to recognize and apply an understanding of interrelationships among different information technology functions and activities.

Level 4-4 — 225 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**

FLD

Nature of Assignment – The work consists of a variety of duties that involve many different and unrelated processes and methods pertinent to the information technology field.

What Needs To Be Done – The employee decides what needs to be done by evaluating unusual circumstances, considering different approaches, and dealing with incomplete and conflicting data.

Difficulty and Originality Involved – The employee exercises judgment and originality by interpreting data, planning the work, and refining the methods and techniques being used.

Level 4-5 — 325 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**

FLD

Nature of Assignment – The work consists of a variety of duties requiring the application of many different and unrelated processes and methods to a broad range of information technology activities or to the in-depth analysis of information technology issues.

What Needs To Be Done – The employee makes decisions that involve major uncertainties with regard to the most effective approach or methodology to be applied that typically result from continuing changes in customer business requirements or rapidly evolving technology in the specialty areas.

Difficulty and Originality Involved – The employee:

- develops new standards, methods, and techniques;
- evaluates the impact of technological change; and/or
- conceives of solutions to highly complex technical issues.

The work frequently involves integrating the activities of multiple specialty areas.

Level 4-6 — 450 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**

FLD

Nature of Assignment – The work consists of broad functions and processes, such as planning and leading efforts to address issues in areas where precedents do not exist and establishing new concepts and approaches is required. Assignments are characterized by exceptional breadth and intensity of effort and often involve several activities being pursued concurrently or sequentially with the support of others within or outside the organization.

What Needs To Be Done – The employee decides what needs to be done by conducting extensive investigation and analysis of largely undefined factors and conditions to determine the nature and scope of problems and to devise solutions.

Difficulty and Originality Involved – The employee makes continuing efforts to develop new concepts, theories, or programs, or to solve problems that have previously resisted solution.

FACTOR 5 – SCOPE AND EFFECT

This factor covers the relationships between the nature of work, i.e., the purpose, breadth and depth of the assignment, and the effect of work products or services both within and outside the organization. Effect measures such things as whether the work output facilitates the work of others, provides timely services of a personal nature, or impacts on the adequacy of research conclusions. The concept of effect alone does not provide sufficient information to properly understand and evaluate the impact of the position. The scope of the work completes the picture allowing consistent evaluations. Only consider the effect of properly performed work. The primary components of this factor are: **Scope of the Work** and **Effect of the Work**.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 5 illustrations are located in Appendix F5.

Level 5-1 — 25 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**(Operating Systems)**
(Customer Support)	**(Policy and Planning)**
(Data Management)	**(Security)**
(Internet)	**(Systems Analysis)**
(Network Services)	**(Systems Administration)**

FLD

Scope of the Work – Work involves:

- specific, routine duties that include a few separate tasks or procedures; and
- assignments that familiarize the employee with IT programs and services.

Effect of the Work – Work facilitates the work of others but has little impact beyond the immediate organizational unit or beyond the delivery of limited services in a timely manner to others.

Level 5-2 — 75 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**

FLD

Scope of the Work – Work involves:

- carrying out work requiring application of specific standards, methods, and procedures; and
- a complete segment of an assignment or project of broader scope.

Effect of the Work – Work affects the overall accuracy, reliability, acceptability, and timeliness of the final work products or services developed or delivered by higher-grade co-workers.

Level 5-3 — 150 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**

FLD

Scope of the Work – Work involves a variety of common problems, questions, or situations that are dealt with in accordance with established criteria.

Effect of the Work – Work affects:

- the design, testing, implementation, operation, or support of IT systems; or
- the quality and reliability of services.

Level 5-4 — 225 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**

FLD

Scope of the Work – Work involves:

- establishing criteria;
- formulating projects;
- assessing program effectiveness; and/or
- investigating/analyzing a variety of unusual conditions, problems, or issues.

Effect of the Work – Work products or services affect a wide range of agency activities or the operations of other organizations.

Level 5-5 — 325 Points

Series

Information Technology Management, GS-2210

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**

FLD

Scope of the Work – Work involves:

- isolating and defining unprecedented conditions;
- resolving critical problems; or
- developing, testing, and implementing new technologies.

Effect of the Work – Work products or services affect the work of other technical experts or the development of major aspects of IT programs.

Level 5-6 — 450 Points

Series

Information Technology Management, GS-2210 (All Specialties)

Specialties

Information Technology Specialist

(Applications Development)	**Illustration(s)**	**(Operating Systems)**	**Illustration(s)**
(Customer Support)	**Illustration(s)**	**(Policy and Planning)**	**Illustration(s)**
(Data Management)	**Illustration(s)**	**(Security)**	**Illustration(s)**
(Internet)	**Illustration(s)**	**(Systems Administration)**	**Illustration(s)**
(Network Services)	**Illustration(s)**	**(Systems Analysis)**	**Illustration(s)**

FLD

Scope of the Work – Work involves planning, developing, and carrying out broad and extensive assignments (e.g., involving several agencies) of significant interest to the public and the Government. Projects typically cut across or strongly influence a number of agencies.

Effect of the Work – Work:

- often leads to recommendations for realigning IT responsibilities among agencies or to expansion or contraction of key governmental functions or other equally significant changes in the future direction of IT programs; and/or
- affects large numbers of people on a long-term or continuing basis.

FACTOR 6 – PERSONAL CONTACTS
AND
FACTOR 7 – PURPOSE OF CONTACTS

These factors include face-to-face and remote dialogue–e.g., telephone, email, and video-conferences – with persons not in the supervisory chain. (**NOTE**: Personal contacts with supervisors are under Factor 2 – Supervisory Controls.) The levels of these factors consider and take into account what is necessary to make the initial contact, the difficulty of communicating with those contacted, the setting in which the contact takes place, and the nature of the discourse. The setting describes how well the employee and those contacted recognize their relative roles and authorities. The nature of the discourse defines the reason for the communication and the context or environment in which the communication takes place. For example, the reason for a communication may be to exchange factual information or to negotiate. The communication may take place in an environment of significant controversy and/or with people of differing viewpoints, goals, and objectives.

Above the lowest levels, credit points under Factors 6 and 7 only for contacts that are essential for successful performance of the work and that have a demonstrable impact on the difficulty and responsibility of the work performed. Factors 6 and 7 are inter-dependent. Accordingly, use the same personal contacts for selection of both the Factor 6 and the Factor 7 levels.

Determine the appropriate level for Personal Contacts and the corresponding level for Purpose of Contacts. Obtain the point value for these factors from the intersection of the two levels as shown on the **Point Assignment Chart** at the end of this section.

PERSONAL CONTACTS	
Information Technology Management, GS-2210	
Level 1	Other employees in the immediate office or related offices. Limited contacts with the public.
Level 2	Employees and managers in the agency, both inside and outside the immediate office or related units, as well as employees, representatives of private concerns, and/or the general public, in moderately structured settings. Contact with employees and managers may be from various levels in the agency, such as: • headquarters; • regions; • districts; • field offices; or • other operating offices at the same location. **(continued)**

PERSONAL CONTACTS (continued)	
Level 3	Individuals or groups from outside the agency, including consultants, contractors, vendors, or representatives of professional associations, the media, or public interest groups, in moderately unstructured settings. This level may also include contacts with agency officials who are several managerial levels removed from the employee when such contacts occur on an ad hoc basis. Must recognize or learn the role and authority of each party during the course of the meeting.
Level 4	High-ranking officials from outside the agency at national or international levels, in highly unstructured situations. Typical contacts at this level include: • heads of other agencies and Presidential advisors; • Members of Congress; • State governors or mayors of major cities; • leading representatives of foreign governments; • executives of comparable private sector organizations; • presidents of national unions; or • nationally recognized representatives of the news media on information technology matters of national importance.

PURPOSE OF CONTACTS	
Information Technology Management, GS-2210 (All Specialties)	
Level A	To acquire, clarify, or exchange information needed to compete the assignments, regardless of the nature of the information. The information may range from easily understood to highly technical.
Level B	To plan, coordinate, or advise on work efforts, or to resolve issues or operating problems by influencing or persuading people who are working toward mutual goals and have basically cooperative attitudes. Contacts typically involve identifying options for resolving problems.
Level C	To influence and persuade employees and managers to accept and implement findings and recommendations. May encounter resistance as a result of issues such as organizational conflict, competing objectives, or resource problems. Must be skillful in approaching contacts to obtain the desired effect; e.g., gaining compliance with established policies and regulations by persuasion or negotiation.
Level D	To present justify, defend, negotiate, or settle matters involving significant or controversial issues; e.g., recommendations changing the nature and scope of programs or dealing with substantial expenditures. The work usually involves active participation in conferences, meetings, hearings, or presentations involving problems or issues of considerable consequence or importance. Persons contacted typically have diverse viewpoints, goals, or objectives requiring the employee to achieve a common understanding of the problem and a satisfactory solution by convincing them, arriving at a compromise, or developing suitable alternatives.

POINT ASSIGNMENT CHART					
Information Technology Management, GS-2200					
		Purpose of Contacts			
	Level	**A**	**B**	**C**	**D**
Personal Contacts	**1**	30	60	130*	230*
	2	45	75	145	245
	3	80	110	180	280
	4	130*	160	230	330

***THIS COMBINATION IS UNLIKELY.**

Ü BACK

FACTOR 8 – PHYSICAL DEMANDS

NOTE: Laws and regulations governing pay for irregular or intermittent duty involving unusual physical hardship or hazard are in *section 5545(d), of title 5, United States Code*, and *Subpart I of part 550 of title 5, Code of Federal Regulations.*

NOTE: In the table below, factor level description is abbreviated as FLD.

Level 8-1	**5 Points**
Series	**Information Technology Management, GS-2210**
FLD	The work is sedentary. Some work may require walking and standing in conjunction with travel and to attendance at meetings and conferences away from the work site. Some employees may carry light items such as papers, books, or small parts, or drive a motor vehicle. The work does not require any special physical effort.

FACTOR 9 – WORK ENVIRONMENT

NOTE: Laws and regulations governing pay for irregular or intermittent duty involving unusual physical hardship or hazard are in *section 5545(d), of title 5, United States Code*, and *Subpart I of part 550 of title 5, Code of Federal Regulations.*

NOTE: In the table below, factor level description is abbreviated as FLD.

Level 9-1	**5 Points**
Series	**Information Technology Management, GS-2210 (All Specialties)**
FLD	The work area is adequately lighted, heated, and ventilated. The work environment involves everyday risks or discomforts that require normal safety precautions. Some employees may occasionally be exposed to uncomfortable conditions in such places as research and production facilities.

GRADE CONVERSION TABLE

Convert total points on all evaluation factors to General Schedule grades using the following table. The shaded area(s) reflect grade levels commonly attained in this job family.

Point Range	GS Grade
190-250	1
255-450	2
455-650	3
655-850	4
855-1100	5
1105-1350	6
1355-1600	7
1605-1850	8
1855-2100	9
2105-2350	10
2355-2750	11
2755-3150	12
3155-3600	13
3605-4050	14
4055-up	15

APPENDICES

APPENDIX F1 – FACTOR 1 ILLUSTRATIONS

Level 1-6: Information Technology Specialist (Customer Support), GS-2210

Knowledge of, and skill in applying:

- customer support principles;
- installed systems bases;
- IT security principles;
- methods and procedures for documenting resolutions;
- problem resolution databases;
- troubleshooting and data analysis methods; and
- communication skill

sufficient to:

- receive, respond to, and ensure complete resolution of any help center call;
- document actions taken;
- give needed guidance or training to customers to prevent recurrences; and
- assist more experienced specialists in resolving very complex problems.

Ù BACK

Knowledge of, and skill in applying:

- customer support concepts and methods;
- the organization's IT infrastructure;
- IT security principles; and
- new information technologies

sufficient to install, configure, and test software on customer workstations.

Ù BACK

Level 1-6: Information Technology Specialist (Data Management), GS-2210

Knowledge of, and skill in applying:

- data management concepts and methods;
- systems security principles; and
- technical documentation procedures

sufficient to update:

- user manuals;
- authentication procedures;
- installation procedures;
- systems administrator functions; and
- related security features.

Ù BACK

(continued)

Level 1-6: Information Technology Specialist (Data Management), GS-2210 (continued)

Knowledge of, and skill in applying:

- data management concepts and methods;
- IT security principles; and
- operating environments

sufficient to execute a variety of database and utility functions.
Ū BACK

Knowledge of, and skill in applying:

- data management methods;
- communication skill; and
- analytical ability

sufficient to assist customers in navigating and accessing databases using various interface methods.
Ū BACK

Knowledge of, and skill in applying:

- data management principles;
- data storage technology;
- operating systems;
- commonly used platforms, and
- backup and recovery procedures

sufficient to implement operating systems procedures for running timed or scheduled events such as file backups.
Ū BACK

Level 1-6: Information Technology Specialist (Internet), GS-2210

Knowledge of, and skill in applying:

- Web page design principles and methods;
- graphics markup languages;
- multimedia principles, methods, and tools;
- programming languages,;
- file formats; and
- browser technical requirements

sufficient to:

- ensure that new pages are consistent with relevant design standards; and
- advise content developers on Web page requirements.

Ū BACK

(continued)

Level 1-6: Information Technology Specialist (Internet), GS-2210 (continued)

Knowledge of, and skill in applying:

- Internet operations;
- graphics markup languages;
- programming languages;
- Internet server maintenance techniques;
- software validation tools;
- performance monitoring methods; and
- analytical ability

sufficient to:

- diagnose and troubleshoot Web site operational problems such as broken links or file directory, server, or applications problems;
- make corrections; and
- restore functionality.

Ù BACK

Knowledge of, and skill in applying:

- Internet principles;
- programming languages;
- optimization or tuning tools;
- Internet clients;
- browser technology;
- quality assurance principles; and
- analytical reasoning

sufficient to:

- fine tune Web pages and other Internet services to ensure compatibility with different browsers; and
- test new browser versions for compatibility with existing services.

Ù BACK

Level 1-6: Information Technology Specialist (Network Services), GS-2210

Knowledge of, and skill in applying:

- network standards;
- network management tools; and
- network equipment capabilities

sufficient to troubleshoot and maintain the stability of communications lines and equipment.

Ù BACK

(continued)

Level 1-6: Information Technology Specialist (Network Services), GS-2210 (continued)

Knowledge of, and skill in applying:

- network standards and equipment;
- network architecture principles; and
- local area network and wide area network (LAN and WAN) principles

sufficient to install, configure, and troubleshoot LAN and WAN components such as routers, hubs, switches, and servers.

Ū BACK

Knowledge of, and skill in applying:

- network principles and concepts; and
- network equipment and tools

sufficient to:

- assist in maintaining network services, such as Dynamic Host Configuration Protocol (DHCP), Domain Name Server (DNS), and directory services;
- install, test, and configure network workstations and peripherals; and
- instruct customers in logging on and accessing network services.

Ū BACK

Knowledge of, and skill in applying:

- configuration management concepts; and
- life cycle management concepts

sufficient to identify the need to upgrade or enhance network component capabilities in response to network problems and deficiencies; e.g., degradation of service.

Ū BACK

Level 1-6: Information Technology Specialist (Operating Systems), GS-2210

Knowledge of, and skill in applying:

- software installation and configuration procedures;
- life cycle management principles;
- optimization methods;
- communication skill; and
- analytical reasoning

sufficient to assist in readying the operating environment to support testing activities.

Ū BACK

(continued)

Level 1-6: Information Technology Specialist (Operating Systems), GS-2210 (continued)

Knowledge of, and skill in applying:

- software installation and configuration procedures;
- operational environments;
- life cycle management concepts;
- communication skill, and
- analytical reasoning

sufficient to:

- assist in the installation of operating systems update packages;
- run tests and correct problems; and
- recognize and refer serious problems to more experienced specialists or vendors.

Ù BACK

Knowledge of, and skill in applying:

- IT principles and methods;
- operating systems environments; and
- analytical reasoning

sufficient to:

- analyze reports;
- identify deficiencies in operating systems parameters; and
- recommend remediation to a more experienced specialist.

Ù BACK

Knowledge of, and skill in applying:

- IT principles and methods
- operating systems environments;
- scripting languages; and
- analytical reasoning

sufficient to build automated backup and recovery procedures.

Ù BACK

Level 1-6: Information Technology Specialist (Policy and Planning), GS-2210

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication skill; and
- analytical reasoning

sufficient to:

- provide input to drafting position papers on IT issues such as policy implications of new business strategies; e.g., e-Government, knowledge management, and paperwork elimination;
- identify relevant information including industry standards and practices;
- present alternatives;
- make recommendations; and
- assist in implementing decisions.

Ù BACK

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication skill; and
- analytical ability

sufficient to:

- monitor state-of-the art IT developments; and
- make recommendations on how to address trends and new technologies within the context of agency policies, plans, and management strategies.

Ù BACK

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication skill; and
- analytical ability

sufficient to monitor changes in Federal legislation and agency guidance, policy, regulations, and directives for potential impact on organizational policies.

Ù BACK

Level 1-6: Information Technology Specialist (Security), GS-2210

Knowledge of, and skill in applying:

- IT security principles and methods;
- commercial systems security products;
- technical documentation methods; and
- performance management methods

sufficient to:

- carry out activities leading to security certification or accreditation;
- conduct integrated analysis of multiple audit logs (e.g., firewall, web server);
- identify violations and recommend corrective actions; and
- provide input in drafting information systems security documentation (e.g., systems security plans, risk assessments, disaster recovery plans, business continuity plans, and user security guides).

Ù BACK

Knowledge of, and skill in applying risk factors associated with maintaining IT security, such as:

- computer viruses;
- hackers; and
- denials of service

sufficient to:

- implement corrective or preventive actions; and
- mitigate risks; e.g., installing security patches, running anti-virus or other utilities.

Ù BACK

Knowledge of, and skill in applying:

- systems security principles and methods; and
- systems security regulations and policies

sufficient to participate in identifying and writing specifications to meet security requirements at the applications or network server level.

Ù BACK

Level 1-6: Information Technology Specialist (Systems Administration), GS-2210

Knowledge of, and skill in applying:

- systems administration methods and procedures;
- performance monitoring methods; and
- analytical reasoning

sufficient to:

- install server upgrades;
- schedule downtime to minimize user impact;
- monitor server performance using performance monitoring tools; and
- recognize and refer problems to more experienced specialists.

Ù BACK

Knowledge of, and skill in applying:

- systems administration methods and procedures; and
- performance monitoring methods

sufficient to schedule, monitor, and verify the integrity of system backups and restore files as needed.

Ù BACK

Knowledge of, and skill in applying:

- systems administration methods;
- IT security principles; and
- analytical reasoning

sufficient to correct security vulnerabilities in response to problems identified in vulnerability reports and other valid sources.

Ù BACK

Knowledge of, and skill in applying systems administration methods and procedures sufficient to serve as a member of a team responsible for large-scale server deployment.

Ù BACK

Level 1-7: Information Technology Specialist (Applications Software), GS-2210

Knowledge of, and skill in applying:

- applications software development concepts and techniques;
- methods for integrating and optimizing components;
- infrastructure requirements;
- database management features; and
- test and evaluation methods

sufficient to:

- provide technical guidance in designing, coding, testing, debugging, and maintaining programs;
- translating and interpreting functional requirements;
- applying computer assisted software engineering (CASE) tools to the design and development process;
- testing, installing, implementing, documenting, and maintaining software; and
- providing guidance to less experienced coworkers in solving programming problems.

Ù BACK

Knowledge of, and skill in applying:

- software design concepts and methods;
- procedures for integrating and optimizing components;
- infrastructure requirements;
- database management;
- systems test and evaluation methods; and
- requirements analysis methods

sufficient to design, code, test, and debug large and complex programs; e.g., mission critical or enterprise-wide impact, including:

- maintaining source code; and
- modifying and upgrading code as necessary.

Ù BACK

Knowledge of, and skill in applying:

- software design principles and methods;
- infrastructure requirements;
- systems test and evaluation methods; and
- new software design technologies

sufficient to:

- design and update standards used to develop object-oriented graphical user interfaces; and
- set standards applicable to the design, development, and integration of new and reusable systems components.

Ù BACK

(continued)

Level 1-7: Information Technology Specialist (Applications Software), GS-2210 (continued)

Knowledge of, and skill in applying:

- software design principles and methods;
- test and evaluation methods; and
- project management methods

sufficient to coordinate efforts to enhance software reliability through leadership of discussions of enhanced application design methodologies; e.g., Capability Maturity Model (CMM).

Ũ BACK

Level 1-7: Information Technology Specialist (Customer Support), GS-2210

Knowledge of, and skill in applying:

- customer support concepts and methods; and
- installed applications, operating systems, network systems, protocols, and equipment

sufficient to prepare standard log-in scripts and establish network access protocols to enable local or remote access.

Ũ BACK

Knowledge of, and skill in applying:

- customer support concepts and methods;
- procedures for troubleshooting and recovering systems and files; and
- customer organizations' IT infrastructures

sufficient to review, validate, and standardize problem resolutions for inclusion in the problem resolution database.

Ũ BACK

Knowledge of, and skill in applying:

- customer support concepts and methods;
- installed operating systems, network systems, applications, protocols, and equipment; and
- the IT infrastructure

sufficient to serve as senior customer technical analyst with responsibility for resolving the most complex customer problems; e.g., by reimaging customer workstations and correcting other workstations affected by similar problems.

Ũ BACK

(continued)

Level 1-7: Information Technology Specialist (Customer Support), GS-2210 (continued)

Knowledge of, and skill in applying:

- customer support concepts and practices; and
- new customer support technologies

sufficient to:

- evaluate and report on new tools and trends in the customer support field such as browser-based and speech-enabled customer support services;
- organize vendor demonstration sessions for other specialists; and
- recommend purchase of new tools to enhance the delivery of customer support services.

Ù BACK

Level 1-7: Information Technology Specialist (Data Management), GS-2210

Knowledge of, and skill in applying:

- database management concepts and principles;
- the organization's data assets; and
- data administration and data standardization methods

sufficient to:

- develop data models;
- produce database design schema for integrating source data into data management systems;
- ensure compliance with data management standards; and
- recommend new or modified standards to increase efficiency.

Ù BACK

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets and technical architecture; and
- performance management and optimization methods

sufficient to:

- conduct performance tuning activities designed to optimize data management processes; and
- recommend performance enhancements such as increasing storage capacity or modifying interfaces.

Ù BACK

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets and technical architecture; and
- performance management and optimization methods

sufficient to plan and coordinate the migration of data to a newer version of a database management system.

Ù BACK

(continued)

Level 1-7: Information Technology Specialist (Data Management), GS-2210 (continued)

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets;
- storage media tools;
- IT security methods; and
- project management methods

sufficient to:

- perform a wide range of database administration functions;
- run test queries;
- troubleshoot database problems;
- maintain version control of database entities;
- advise customers on new database features; and
- lead studies to evaluate the effectiveness of current database methods and procedures.

Ù BACK

Level 1-7: Information Technology Specialist (Internet), GS-2210

Knowledge of, and skill in applying:

- available Internet technologies;
- programming and scripting languages;
- Internet protocols;
- usability concepts;
- accessibility requirements;
- customers' missions and programs;
- requirements analysis methods; and
- analytical reasoning

sufficient to:

- optimize existing Web sites; and
- provide guidance in design and development of new Web sites.

Ù BACK

(continued)

Level 1-7: Information Technology Specialist (Internet), GS-2210 (continued)

Knowledge of, and skill in applying:

- Internet technologies;
- programming languages;
- Internet protocols;
- usability concepts;
- IT security principles;
- database management principles; and
- requirements analysis methods

sufficient to provide technical consultation to database developers in the development and implementation of Internet-enabled databases.

Ù BACK

Knowledge of, and skill in applying:

- Internet technologies;
- Internet protocols, including security protocols;
- database management principles;
- Internet server operations; and
- analytical reasoning

sufficient to select, implement, and maintain data protection mechanisms to provide secure transmission capabilities for e-Government, e-Business, or e-Commerce applications.

Ù BACK

Knowledge of, and skill in applying:

- Internet technologies;
- Internet protocols;
- usability concepts;
- Internet security;
- database management principles;
- Internet server operations; and
- COTS software

sufficient to:

- design Internet portals to provide access to services such as email, databases, and management tools; and
- integrate third party applications into Internet services.

Ù BACK

Level 1-7: Information Technology Specialist (Network Services), GS-2210

Knowledge of, and skill in applying:

- network design principles and concepts;
- network architecture principles and concepts;
- network protocols; and
- remote access technology concepts

sufficient to establish connectivity between remote sites.
Ũ BACK

Knowledge of, and skill in applying:

- network operation and maintenance concepts and methods;
- network architecture principles and concepts; and
- network management tools

sufficient to:

- create network maps; and
- troubleshoot network problems; e.g., outages.

Ũ BACK

Knowledge of, and skill in applying:

- network design principles and concepts;
- configuration management concepts and practices;
- network topology concepts; and
- LAN and WAN development principles and methods

sufficient to develop and implement configuration management plans for complex LANs and WANs.
Ũ BACK

Knowledge of, and skill in applying:

- network operations, management, and maintenance methods and concepts;
- network architecture principles and concepts;
- network optimization techniques; and
- analytical reasoning

sufficient to serve as network administrator, including responsibility for:

- configuring hubs, switches, and routers;
- monitoring network performance;
- performing network diagnostics;
- analyzing network traffic patterns; and
- installing network software fixes and upgrades.

Ũ BACK

(continued)

Level 1-7: Information Technology Specialist (Network Services), GS-2210 (continued)

Knowledge of, and skill in applying:

- network design and development concepts;
- network architecture principles and concepts; and
- acquisition management policies

sufficient to develop requirements for the acquisition of network hardware, software, and services.

Ū BACK

Level 1-7: Information Technology Specialist (Operating Systems), GS-2210

Knowledge of, and skill in applying:

- operating systems software principles and methods;
- life cycle management concepts;
- IT infrastructure;
- IT security principles and methods;
- systems testing and evaluation principles and methods; and
- troubleshooting procedures

sufficient to:

- install, configure, test, and implement vendor supplied modifications to existing systems software;
- develop and evaluate test data to validate program modifications; and
- migrate modifications into production systems.

Ū BACK

Knowledge of, and skill in applying:

- operating systems principles and methods; and
- performance management and measurement methods

sufficient to:

- monitor systems performance data; and
- make appropriate systems tuning adjustments to optimize performance and correct and prevent problems.

Ū BACK

(continued)

Level 1-7: Information Technology Specialist (Operating Systems), GS-2210 (continued)

Knowledge of, and skill in applying:

- operating systems principles and methods; and
- the operating environment

sufficient to consult with applications developers to determine the effect on end user applications resulting from changes to the operating environment; e.g., new software or hardware installations.

Ù BACK

Knowledge of, and skill in applying:

- operating systems principles and methods;
- functionality of the current systems environment;
- requirements analysis methods; and
- COTS software and components

sufficient to determine and properly configure systems components such as disk drives, printers, and other peripherals needed to support the operating environment.

Ù BACK

Knowledge of, and skill in applying:

- operating systems principles and methods;
- the current operating environment;
- life cycle management concepts ;
- performance management and optimization methods; and
- acquisition management policies and procedures

sufficient to plan and coordinate the installation, upgrade, and maintenance of the operating environment including:

- compilers;
- utilities;
- communications systems;
- systems management products;
- third party systems software;
- security packages;
- scheduling systems; and
- applications software packages

including evaluating, selecting, and coordinating the acquisition of appropriate systems software packages and hardware.

Ù BACK

Level 1-7: Information Technology Specialist (Policy and Planning), GS-2210

Knowledge of, and skill in applying:

- capital planning principles and methods;
- the enterprise architecture;
- the organization's IT goals and objectives;
- policy and planning processes;
- cost benefit analysis methods; and
- performance metrics

sufficient to prepare capital investment plans to support the organization's mission.

Ū BACK

Knowledge of, and skill in applying:

- IT methods and best practices;
- the organization's mission and programs;
- the organization's IT infrastructure;
- performance management methods;
- requirements analysis methods; and
- cost benefits analysis methods

sufficient to assist other components in developing business cases including establishing IT performance metrics and anticipated total cost of ownership.

Ū BACK

Knowledge of, and skill in applying:

- IT best practices;
- the organization's mission and programs; and
- new technologies

sufficient to:

- author position papers on IT issues such as the implementation of emerging technologies;
- identify and interpret relevant information including industry standards and practices;
- develop alternatives approaches to addressing issues;
- recommend solutions; and
- lead the implementation of management decisions.

Ū BACK

(continued)

Level 1-7: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Knowledge of, and skill in applying:

- IT best practices;
- the policy and planning formulation process;
- the organization's mission and programs;
- requirements analysis methods; and
- cost benefit analysis methods

sufficient to:

- evaluate the impact of changes in business needs on current policy;
- conduct feasibility studies;
- identify solutions; and
- present recommendations to management.

Ũ BACK

Level 1-7: Information Technology Specialist (Security), GS-2210

Knowledge of, and skill in applying IT security principles and methods sufficient to:

- evaluate;
- recommend acquisition;
- implement; and
- disseminate

information systems security tools and procedures to protect information assets.

Ũ BACK

Knowledge of, and skill in applying:

- IT security principles and methods;
- requirements analysis principles and methods; and
- COTS products

sufficient to plan and coordinate the delivery of an IT security awareness training program for end users at all levels in the organization.

Ũ BACK

(continued)

Level 1-7: Information Technology Specialist (Security), GS-2210 (continued)

Knowledge of, and skill in applying:

- IT security principles and methods;
- analytical ability; and
- communications skill

sufficient to:

- update the organization's contingency or disaster recovery plans to respond to new security requirements or changes in the IT architecture; and
- present updated plans to the IT security manager for review and approval.

Ũ BACK

Knowledge of, and skill in applying:

- IT security principles and methods;
- requirements for certification and accreditation;
- systems testing and evaluation; and
- performance management methods

sufficient to:

- plan and conduct security accreditation reviews for installed systems or networks; and
- recommend new or revised security measures and countermeasures based on the results of accreditation reviews.

Ũ BACK

Knowledge of, and skill in applying:

- information systems security principles; and
- test and assessment methods

sufficient to:

- evaluate new security authentication technologies such as public key infrastructure certificates, secure cards, and biometrics;
- recommend the purchase of authentication software; and
- administer and monitor implementation.

Ũ BACK

(continued)

Level 1-7: Information Technology Specialist (Security), GS-2210 (continued)

Knowledge of, and skill in applying:

- information systems security principles and methods;
- network operations and protocols; and
- life cycle management principles

sufficient to:

- identify and specify information systems security requirements associated with migrations to new environments; and
- provide guidance in planning and implementing migration activities.

Ù BACK

Knowledge of, and skill in applying:

- systems security principles and methods; and
- systems security regulations and policies

sufficient to develop specifications to ensure compliance with security requirements at the systems or LAN level.

Ù BACK

Level 1-7: Information Technology Specialist (Systems Administration), GS-2210

Knowledge of, and skill in applying:

- methods to integrate systems components; and
- performance tuning tools

sufficient to:

- optimize systems performance;
- reallocate resources as they become available; and
- recommend additional components to improve overall systems performance.

Ù BACK

(continued)

Level 1-7: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Knowledge of, and skill in applying:

- systems integration methods;
- performance tuning methods;
- test and evaluation methods and procedures;
- IT security principles and methods; and
- project management principles and methods

sufficient to:

- plan and coordinate the installation of new products or equipment; e.g., servers;
- work closely with customer officials to ensure seamless implementation;
- resolve installation problems;
- identify and mitigate security vulnerabilities and risks; and
- maintain server integrity and availability.

Ù BACK

Knowledge of, and skill in applying:

- systems integration methods;
- the mission and programs of customer organizations;
- the IT infrastructure;
- requirements analysis methods; and
- new technologies

sufficient to:

- identify and anticipate server performance, availability, capacity or configuration problems; and
- initiate corrective or preventive actions, such as increasing disk or memory capacity to improve performance.

Ù BACK

Level 1-7: Information Technology Specialist (Systems Analysis), GS-2210

Knowledge of, and skill in applying:

- systems analysis concepts and techniques;
- structured analysis principles;
- customers' business processes and operations;
- life cycle management concepts;
- cost-benefit analysis methods; and
- Internet technologies

sufficient to:

- evaluate the feasibility of proposed new systems development projects;
- consult with customers to refine functional requirements;
- translate functional requirements into design specifications;
- determine best approaches for implementation within the technical environment; and
- work with applications developers to isolate and solve design problems encountered during testing and implementation stages.

Ū BACK

Level 1-8: Information Technology Specialist (Applications Software), GS-2210

Mastery of, and skill in applying:

- software design concepts and methods;
- relationships among multiple IT disciplines;
- the IT infrastructure; and
- project management principles and methods

sufficient to:

- lead a multifunctional development team in software analysis, design, development, and implementation for a new system or major enhancement to an existing system;
- draft project plans,
- identify resource requirements;
- assign tasks to project team members;
- report progress;
- ensure customer and management involvement throughout the software development process;
- resolve critical issues affecting the configuration of the IT infrastructure; and
- coordinate the demonstration of new and enhanced applications to customers and management.

Ū BACK

(continued)

Level 1-8: Information Technology Specialist (Applications Software), GS-2210 (continued)

Mastery of, and skill in applying:

- applications software design concepts and methods;
- new technologies; and
- project management principles; e.g., metrics management

sufficient to lead the applications development process to identify and correct:

- weaknesses in critical performance parameters; and
- variances in achieving cost, schedule, and performance goals.

Ù BACK

Mastery of, and skill in applying:

- applications software design principles and methods; and
- interrelationships between IT disciplines and new software design technology

sufficient to:

- investigate, evaluate, and select tools and methods for improving productivity and software quality throughout the life cycle;
- assess the feasibility of adopting new software design technologies within the current systems environment; and
- develop best practices guides for use by other applications software specialists.

Ù BACK

Level 1-8: Information Technology Specialist (Customer Support), GS-2210

Mastery of, and skill in applying:

- customer support principles, methods, and practices;
- the interrelationships among different IT disciplines;
- the enterprise IT infrastructure; and
- project management principles and methods

sufficient to manage special projects that have a significant impact on the delivery of customer support services; e.g., infrastructure or work force relocation

Ù BACK

(continued)

Level 1-8: Information Technology Specialist (Customer Support), GS-2210 (continued)

Mastery of, and skill in applying:

- customer support principles, methods, and practices;
- interrelationships between multiple IT disciplines;
- the organization's IT infrastructure; and
- project management methods

sufficient to:

- represent the customer support office in planning for the installation and implementation of new systems; e.g., upgrade to a new operating system; and
- lead efforts to define post-implementation support requirements.

Ū BACK

Mastery of, and skill in applying, customer support principles, concepts, and methods, and knowledge of, and skill in applying, IT measurements tools and techniques for evaluating program effectiveness, sufficient to:

- develop service level agreements (SLAs) that define requirements and expectations for the delivery of customer support services; and
- develop and implement performance criteria to ensure that requirements are achieved.

Ū BACK

Level 1-8: Information Technology Specialist (Data Management), GS-2210

Mastery of, and skill in applying:

- database management concepts and techniques;
- project management principles and methods;
- data mining, storage, and warehousing methods; and
- the organization's IT infrastructure

sufficient to:

- lead a team in developing and implementing data management schema;
- plan and coordinate the development of data structures and access strategies in alignment with business and mission requirements;
- develop technical designs;
- identify systems requirements;
- validate data sources;
- establish testing, implementation, and post-implementation support procedures;
- develop user instructions; and
- coordinate the evaluation and selection of data management tools.

Ū BACK

(continued)

Level 1-8: Information Technology Specialist (Data Management), GS-2210 (continued)

Mastery of, and skill in applying:

- data management concepts and techniques;
- the enterprise IT infrastructure;
- interrelationships among multiple IT specialties; and
- project management principles and methods

sufficient to:

- plan and manage the migration of databases to new technologies such as the migration from client-server to web-enabled databases; and
- plan and oversee the installation or reinstallation process and coordinate with specialists in other functional areas to resolve connectivity, compatibility, reliability, security, and related issues.

Ū BACK

Level 1-8: Information Technology Specialist (Internet), GS-2210

Mastery of, and skill in applying:

- Internet services concepts and best practices;
- Internet services architecture;
- interrelationships of multiple IT disciplines; and
- project management principles

sufficient to:

- lead the development of Internet policies for the organization;
- identify policy needs and priorities;
- establish policy development agendas; and
- prepare and implement metrics for measuring policy effectiveness.

Ū BACK

(continued)

Level 1-8: Information Technology Specialist (Internet), GS-2210 (continued)

Mastery of, and skill in applying:

- Internet services;
- project management principles and methods; and
- the enterprise IT architecture

sufficient to:

- formulate a vision for future applications of Internet services to meet agency missions; and
- develop business plans to align Internet services with business requirements.

Ū BACK

Mastery of, and skill in applying:

- Internet technologies and services; and
- new technologies

sufficient to:

- research;
- evaluate;
- report on new and emerging developments in the Internet services area; and
- recommend adoption of technologies that will improve service delivery.

Ū BACK

Level 1-8: Information Technology Specialist (Network Services), GS-2210

Mastery of, and skill in applying:

- network management methods;
- network enterprise architecture;
- bandwidth management concepts;
- work flow concepts,
- IT security methods;
- the organization's business and mission requirements; and
- project management principles

sufficient to manage a large and complex network including:

- conducting cost-benefit analyses and total cost of ownership and capacity studies;
- establishing routing schema;
- establishing security practices;
- developing contingency and recovery plans;
- maintaining directory services;
- managing domain name services;
- providing intranet, Internet, or extranet gateways; and
- coordinating other actions to ensure the implementation of networks that support mission requirements.

Ū BACK

(continued)

Level 1-8: Information Technology Specialist (Network Services), GS-2210 (continued)

Mastery of, and skill in applying:

- network management systems concepts;
- network architecture;
- advanced network technologies; and
- project management methods

sufficient to lead the implementation of major projects such as:

- upgrading from hubs to switches;
- consolidating regional networks; and
- redesigning network infrastructure in response to changes in network technologies or network requirements.

Ù BACK

Mastery of, and skill in applying:

- network management systems;
- network architectures;
- IT security; and
- project management methods;

sufficient to develop contingency plans to ensure continuous availability and accessibility of network resources in the event of emergencies.

Ù BACK

Mastery of, and skill in applying:

- network management systems methods;
- network and IT architectures;
- available bandwidth resources; and
- IT security policies

sufficient to manage the design of network architectures, including:

- evaluating and defining infrastructure requirements;
- selecting hardware and software components;
- assembling installation teams;
- coordinating network implementation planning; and
- overseeing testing and implementation.

Ù BACK

Level 1-8: Information Technology Specialist (Operating Systems), GS-2210

Mastery of, and skill in applying:

- operating systems theories and concepts; and
- interrelationships of multiple IT disciplines

sufficient to:

- provide authoritative advice to other specialists in areas such as disaster recovery, capacity planning, applications development, hardware strategy, and operating systems security; and
- develop and implement agencywide or enterprisewide guidelines.

Ù BACK

Mastery of, and skill in applying:

- operating systems theories and concepts;
- the interrelationships of multiple IT disciplines; and
- project management principles, methods, and practices

sufficient to:

- lead a major project; e.g., installation of new operating environments or implementation of new operating systems patches, upgrades, and releases;
- consult with developers or vendors in defining requirements and identifying integration issues;
- oversee installation, customization, testing, and implementation of the operating environment; and
- work with vendor software engineers to correct problems and enhance performance.

Ù BACK

Mastery of, and skill in applying:

- operating systems theories and concepts;
- Internet technologies;
- the interrelationships of multiple IT disciplines; and
- the operating environment

sufficient to:

- evaluate the impact of new and proposed applications on the operating environment; and
- recommend changes to ensure the functionality and stability of the operating environment.

Ù BACK

Level 1-8: Information Technology Specialist (Policy and Planning), GS-2210

Mastery of, and skill in applying:

- policy and planning concepts and practices;
- interrelationships of multiple IT disciplines;
- the enterprise IT architecture;
- performance management and measurement methods and tools; and
- project management methods

sufficient to:

- lead development of an enterprise IT modernization plan;
- work with other departments to establish priorities for IT investments,
- build business cases,
- demonstrate total cost of investment; and
- establish metrics and associated performance measurement tools.

Ũ BACK

Mastery of, and skill in applying, policy and planning concepts and practices and knowledge of, and skill in applying, the interrelationships of multiple IT disciplines and project management methods sufficient to manage communities of interest involved in the development and implementation of workable approaches to IT architecture, capital investment planning, e-Government, and other related legislative and policy initiatives.

Ũ BACK

Level 1-8: Information Technology Specialist (Security), GS-2210

Mastery of, and skill in applying, IT systems security principles, concepts, and methods and knowledge of, and skill in applying, the infrastructure protection environment sufficient to develop long range plans for information security systems that anticipate, identify, evaluate, mitigate, and minimize risks associated with IT systems vulnerabilities.

Ũ BACK

Mastery of, and skill in applying:

- information systems security principles and concepts;
- the enterprise IT architecture;
- new IT security developments; and
- project management principles and methods

sufficient to:

- lead the implementation of security programs designed to anticipate, assess, and minimize system vulnerabilities; e.g., intrusion detection or access authentication programs;
- coordinate the implementation of security programs across platforms; and
- establish vulnerability reporting criteria.

Ũ BACK

(continued)

Level 1-8: Information Technology Specialist (Security), GS-2210 (continued)

Mastery of, and skill in applying:

- information systems security concepts and methods;
- multiple IT disciplines,
- IT enterprise architecture; and
- project management principles and methods

sufficient to:

- review and evaluate security incident response policies;
- identify need for changes based on new security technologies or threats;
- test and implement new policies; and
- institute measures to ensure awareness and compliance.

Ù BACK

Mastery of, and skill in applying information systems security principles, concepts, and methods, and knowledge of, and skill in applying the infrastructure protection environment and multiple IT disciplines sufficient to:

- review proposed new systems, networks, and software designs for potential security risks;
- recommend for mitigation or countermeasures; and
- resolve integration issues related to the implementation of new systems within the existing infrastructure.

Ù BACK

Mastery of, and skill in applying:

- information systems security principles, and concepts;
- infrastructure protection environment;
- interrelationships of multiple IT disciplines; and
- the Federal IT security hierarchy

sufficient to:

- implement higher-level security requirements such as those resulting from laws, regulations, or Presidential directives;
- integrate security programs across disciplines; and
- define the scope and level of detail for security plans and policies applicable to the security program.

Ù BACK

Knowledge of, and skill in applying, systems security principles, methods, regulations, and policies sufficient to plan and coordinate the development of specifications to meet security requirements at the enterprise or wide area network (WAN) level.

Ù BACK

Level 1-8: Information Technology Specialist (Systems Administration), GS-2210

Mastery of, and skill in applying:

- systems administration and systems engineering theories, concepts, and methods;
- interrelationships of multiple IT disciplines;
- modeling and simulation tools;
- the enterprise architecture; and
- new systems administration developments

sufficient to run simulation models for future applications and to evaluate and verify impacts.
Ù BACK

Mastery of, and skill in applying:

- systems administrations theories, concepts, and methods;
- interrelationships of multiple IT disciplines;
- information systems security standards and methods; and
- IT architecture principles and concepts

sufficient to develop and implement migration strategies including planning for continuity of operations for the deployment of new server technology.
Ù BACK

Mastery of, and skill in applying:

- systems administration theories, concepts, and methods;
- IT architecture;
- new technologies; and
- project management principles and methods

sufficient to develop and present plans for integrating new server technology into existing architecture.
Ù BACK

Mastery of, and skill in applying, the network infrastructure and enterprise management software systems sufficient to plan and coordinate the installation, configuration, maintenance, and upgrade of enterprise management software and related enterprise-level changes to the systems infrastructure.
Ù BACK

Level 1-8: Information Technology Specialist (Systems Analysis), GS-2210

Mastery of, and skill in applying:

- systems analysis principles and techniques;
- process engineering concepts
- new information systems technologies

sufficient to:

- assess new systems design methodologies to improve software quality;
- accurately represent customer requirements;
- effectively measure software development risk;
- present recommendations for adoption of new methodologies; and
- lead implementation.

Ù BACK

Mastery of, and skill in applying:

- systems analysis principles and techniques; and
- enterprise IT architecture and new technologies

sufficient to:

- review the impact of new systems design policies on the systems design process;
- recommend most beneficial implementation approaches; and
- lead implementation activities.

Ù BACK

Level 1-9: Information Technology Specialist (Applications Software), GS-2210

Mastery of:

- software engineering theories, concepts, and practices; and
- project management expertise

sufficient to:

- manage the enterprise-wide implementation of new approaches to software development, such as major changes to the life cycle management process or implementation of the capability maturity model (CMM) approach;
- develop new work processes and procedures to significantly improve the safety, quality, reliability, predictability and cost performance of software systems; and
- create and lead teams to review software code and develop quality assurance measurement criteria.

Ù BACK
(continued)

Level 1-9: Information Technology Specialist (Applications Software), GS-2210 (continued)

Mastery of:

- software engineering theories, concepts, and practices;
- project management expertise; and
- communication skills

sufficient to lead teams conducting independent validation and verification of software applications prior to final acceptance.

Ù BACK

Level 1-9: Information Technology Specialist (Internet), GS-2210

Mastery of:

- state-of-the-art Internet technologies, methods, standards, and issues (e.g., security, privacy, accessibility); and
- project management expertise

sufficient to:

- lead the development and management of a Web site or Web portal for a major program that involves privacy, access, and authentication issues; e.g., access to personnel records;
- provide guidance to a multi-specialty work group of applications developers, data management specialists, network specialists, and others involved in the planning, design, implementation, and maintenance of the Web site or Web portal; and
- ensure ongoing satisfaction of customers and IT management.

Ù BACK

Level 1-9: Information Technology Specialist (Policy and Planning), GS-2210

Mastery of:

- IT policy and planning concepts, methods, and practices; and
- project management expertise

sufficient to:

- represent the agency on interagency work groups established to develop IT policy recommendations and solutions;
- negotiate for the acceptance of agency positions on key policy initiatives;
- develop guidelines for implementing broad governmentwide directives; and
- align agency internal business practices with governmentwide regulations.

Ù BACK

(continued)

Level 1-9: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Mastery of IT policy and planning concepts, methods, and practices, and knowledge of, and skill in applying, project management methods sufficient to:

- lead the evaluation of agency missions and programs to develop an enterprise IT architecture plan;
- conduct continuing evaluations of agency business needs to ensure that architecture plans are aligned with those needs and that the infrastructure supports the architecture plan;
- design plans and strategies to modify the infrastructure to support short and long range goals, objectives, and plans; and
- evaluate, select, and modify the architecture modeling tool set used to document, maintain, and enhance the architecture plan.

Ũ BACK

Level 1-9: Information Technology Specialist (Security), GS-2210

Mastery of information security theories and concepts, practices, and emerging issues, project management expertise sufficient to develop and implement agency level information assurance or information security programs and strategies; e.g., the agency workforce security training program or security audit program.

Ũ BACK

Mastery of information security theories and concepts, practices, and emerging issues, project management expertise sufficient to plan and coordinate agency implementation of governmentwide security defense strategies to ensure protection of the IT infrastructure.

Ũ BACK

APPENDIX F4 – FACTOR 4 ILLUSTRATIONS

Level 4-2: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of maintaining one or more modules of a well-established applications software program.

What Needs To Be Done – The employee makes periodic revisions to code or update technical documentation in response to changes in the activities being supported. The employee debugs source codes to correct program execution errors.

Difficulty and Originality Involved – The employee exercises judgment in determining the most efficient methods for updating, testing, and debugging codes.

Ù BACK

Level 4-2: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of responding to customer help requests according to written procedures. Responses to most requests can be found in the knowledge database.

What Needs To Be Done – The employee decides whether to escalate calls to more experienced specialists.

Difficulty and Originality Involved – The employee is required to maintain currency with the latest versions of the applications or systems being supported.

Ù BACK

Level 4-2: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of maintaining databases that are accessible over the network to customers throughout the organization.

What Needs To Be Done – The employee applies troubleshooting skills in responding to basic accessibility, availability, or operability problems.

Difficulty and Originality Involved – The employee must recognize and refer major problems encountered in maintaining database to the supervisor or a more experienced specialist.

Ù BACK

Level 4-2: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of uploading Web page changes to the organization's Web site.

What Needs To Be Done – The employee determines file names and directory locations based on established criteria.

Difficulty and Originality Involved – The employee resolves common problems and refers situations requiring higher level expertise to a more experienced specialist.
Ù BACK

Nature of Assignment – Work consists of collecting, organizing, and validating Web site statistics.

What Needs To Be Done – The employee follows established procedures.

Difficulty and Originality Involved – The employee prepares tables and charts to be reviewed by more experienced Internet specialists.
Ù BACK

Level 4-2: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of monitoring network performance through use of established online network monitoring tools.

What Needs To Be Done – The employee follows established procedures to isolate potential sources of network problems.

Difficulty and Originality Involved – The employee alerts network administrators regarding deterioration in performance and implements established actions, as directed, to restore network functionality.
Ù BACK

Nature of Assignment – Work consists of installing and testing new network software including upgrades, fixes, and patches.

What Needs To Be Done – The employee uses well-documented performance monitoring tools in carrying out assignments.

Difficulty and Originality Involved – The employee exercises judgment in evaluating software performance based on established parameters.
Ù BACK

Level 4-2: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of maintaining documentation of installations and modifications made to systems software programs.

What Needs To Be Done – The employee follows established procedures for documenting installation activities.

Difficulty and Originality Involved – The employee determines the most effective ways to organize documentation to facilitate use by more experienced specialists in troubleshooting problems .

Ù BACK

Level 4-2: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of maintaining systems security documentation.

What Needs To Be Done – The employee makes periodic revisions, as directed, in response to new requirements or changes in policies.

Difficulty and Originality Involved – The employee makes decisions on the most efficient methods for updating documentation.

Ù BACK

Nature of Assignment – Work consists of monitoring and analyzing systems logs to identify systems security trends.

What Needs To Be Done – The employee follows established procedures for monitoring systems activities for potential security events.

Difficulty and Originality Involved – The employee is required to identify and refer potential problems to more experienced specialists.

Ù BACK

Level 4-2: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of adding, deleting, and modifying user accounts and settings under the direction of a more experienced specialist.

What Needs To Be Done – The employee works directly with customers in obtaining information needed to establish or change accounts.

Difficulty and Originality Involved – The employee makes decisions such as choosing the most effective methods for gathering information from customers.

Ù BACK

(continued)

Level 4-2: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Nature of Assignment – Work consists of performing routine systems backups including changing backup tapes.

What Needs To Be Done – The employee executes commands, monitors the progress of backups, and recognizes problems.

Difficulty and Originality Involved – The employee refers unfamiliar problems to a more experienced specialist.
Ũ BACK

Nature of Assignment – Work consists of maintaining an automated inventory database of equipment and software licenses.

What Needs To Be Done – The employee prepares periodic reports and provides information used in the physical inventory process.

Difficulty and Originality Involved – The employee exercises judgment in determining the most effective methods for presenting information for use by others.
Ũ BACK

Level 4-2: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of reviewing a variety of program documents (e.g., mission statements) and attending preliminary design meetings with more experienced specialists to obtain an understanding of the mission and programs of customer organizations.

What Needs To Be Done – The employee conducts preliminary analyses of business processes for which systems are being developed and collects additional information from customers as needed.

Difficulty and Originality Involved – The employee's decisions are limited to selecting the most effective methods for specifying requirements.
Ũ BACK

Level 4-3: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment –Work consists of building applications software.

What Needs To Be Done – The employee:

- works from requirements approved by a more experienced specialist;
- generates codes;
- translates, compiles, links, tests, and debugs programs;
- prepares instructions for operating personnel; and
- maintains complete records of program development and revision.

Difficulty and Originality Involved – The employee provides post-implementation support that involves troubleshooting and correcting problems with program execution.
Ũ BACK

Level 4-3: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of responding to all types of customer trouble calls that are beyond the complexity of the entry-level specialist.

What Needs To Be Done – The employee:

- reviews lower level referrals and troubleshoots and resolves problems to the extent possible;
- refers more difficult requests to the appropriate levels; and
- recommends changes in standard customer support procedures where existing procedures no longer provide solutions or are outdated**.**

Difficulty and Originality Involved – The employee is required to:

- provide support to customers with varying levels of computing skills; and
- support a wide range of applications running on a variety of platforms.

Ũ BACK

Level 4-3: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – The work consists of maintaining and supporting databases including adding new elements to databases as directed.

What Needs To Be Done – The employee uses COTS database management tools and utilities in monitoring, optimizing, and managing assigned databases.

Difficulty and Originality Involved – The employee is required to troubleshoot problems, such as corrupted tables and consumption of table space, by identifying the most likely problem sources and recommending solutions.

Ũ BACK

Level 4-3: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of reviewing, testing, and implementing new Web pages on the organization's Web site.

What Needs To Be Done – The employee:

- edits source code to place new pages in the appropriate location on the Web site,
- tests new pages to ensure correct formatting, optimum display of graphics, and properly functioning links; and
- publishes pages on the Web server.

Difficulty and Originality Involved – The employee is required to closely coordinate efforts with network and security specialists to ensure compliance with applicable policies.

Ũ BACK

(continued)

Level 4-3: Information Technology Specialist (Internet), GS-2210 (continued)

Nature of Assignment – Work consists of testing Web pages to identify broken links.

What Needs To Be Done – The employee runs and interprets the results of a variety of Web diagnostic programs and responds to user problem reports.

Difficulty and Originality Involved – The employee is required to:

- isolate and investigate the most likely problem sources;
- modify source code or take other actions required to fix broken links;
- locate linked files; and
- use proper syntax to prevent future occurrences.

Ū BACK

Level 4-3: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of monitoring the ongoing operation of local and wide area networks to ensure that systems are functioning properly and meeting optimal performance standards.

What Needs To Be Done – The employee:

- administers customer accounts;
- provides initial orientations to new customers;
- diagnoses and resolves operating problems;
- maintains documentation of LAN configuration including schematic diagram with layout and location of all components;
- executes systems backups;
- implements and monitors compliance with systems security procedures; and
- ensures that proposed software applications will function in the current network environment.

Difficulty and Originality Involved – The employee's work is complicated by:

- the need to ensure network availability;
- the need to implement changes to the network configuration; and
- the responsibility for troubleshooting problems.

Ū BACK

Nature of Assignment – Work consists of reviewing personnel reports and security databases to identify unused network accounts.

What Needs To Be Done – The employee recommends deletion of accounts or changes to access privileges based on the analysis of usage patterns.

Difficulty and Originality Involved – The employee's work is complicated by:

- difficulties in obtaining current and accurate user information; and
- the need to coordinate activities with management officials in other organizations.

Ū BACK

(continued)

Level 4-3: Information Technology Specialist (Network Services), GS-2210 (continued)

Nature of Assignment – Work consists of troubleshooting network problems.

What Needs To Be Done – The employee:

- reviews audit logs and trace files to identify, analyze, and isolate potential problem sources; and
- initiates contacts with applications developers or systems engineers to assist in resolving problems involving equipment, applications, or infrastructure.

Difficulty and Originality Involved – The employee develops and implements solutions in a way that minimizes interruptions to network services.

Ù BACK

Level 4-3: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of scheduling the installation of changes to the operating environment.

What Needs To Be Done – The employee:

- works closely with vendors and customers in coordinating the installation; and
- tests processes according to plans approved at a higher level.

Difficulty and Originality Involved – The employee is required to respond to a variety of unanticipated problems.

Ù BACK

Nature of Assignment – Work consists of tuning operating systems performance parameters including installing patches and downloading new drivers to optimize performance.

What Needs To Be Done – The employee selects and applies standard optimization tools and techniques.

Difficulty and Originality Involved – The employee determines:

- the order in which changes must be made; and
- the impact of changes on the current configuration and on other elements of the operating environment.

Ù BACK

Level 4-3: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of reviewing contract proposals to acquire hardware, software, or IT services to determine whether they address business needs and comply with current policies.

What Needs To Be Done – The employee selects the best approach to use in carrying out reviews of multiple proposals.

Difficulty and Originality Involved – The employee is required to:

- compare multiple proposals that involve different technical approaches or different levels of functionality; and
- recognize situations or issues that require the attention of a more experienced specialist or are potentially precedent setting.

Ù BACK

Level 43: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of installing, configuring, initializing, and maintaining firewalls that protect the network from intrusions, threats, and compromises. The work also involves setting up and configuring firewall logs.

What Needs To Be Done – The employee:

- sets up and configures servers;
- applies filtering rules; and
- performs other tasks required to activate firewall services.

Difficulty and Originality Involved – The employee is responsible for monitoring firewall services and for initiating action in response to attempted intrusions.

Ũ BACK

Nature of Assignment – Work consists of analyzing and defining security requirements for new software applications.

What Needs To Be Done – The employee:

- reviews technical specifications;
- performs risk analyses, including risk assessments;
- identifies potential security risks; and
- recommends program modifications to ensure proper levels of security are implemented.

Difficulty and Originality Involved – The employee is required to devise solutions to security issues related to the testing and implementation of new applications.

Ũ BACK

Level 4-3: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of deinstalling software or replacing hardware components.

What Needs To Be Done – The employee:

- removes drivers and edits systems files related to deinstalled software as necessary;
- runs systems backups; and
- sanitizes hardware removed from service.

Difficulty and Originality Involved – The employee:

- determines the most effective approach to ensure continuing operation during the deinstallation process;
- troubleshoots problems related to deinstallation or replacement actions (e.g., registry settings problems); and
- coordinates corrective actions with vendors and customers when required.

Ũ BACK

(continued)

Level 4-3: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Nature of Assignment – Work consists of implementing and monitoring equipment preventive maintenance schedules to minimize disruptions to systems operations.

What Needs To Be Done – The employee:

- works closely with customers to determine times when service activities will be least disruptive; and
- provides information and instructions related to the maintenance and service process.

Difficulty and Originality Involved – The employee is required to evaluate and recommend improvements to established systems maintenance procedures.

Ũ BACK

Level 4-3: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of developing design specifications for a major module or component of a new or enhanced software system.

What Needs To Be Done – The employee:

- translates and interprets customer-provided business requirements to produce technical specifications;
- works with other design team members in integrating specifications at the system level;
- participates in preparing test plans; and
- reviews and analyzes test data.

Difficulty and Originality Involved – The employee:

- assists in troubleshooting design problems encountered during testing and implementation; and
- modifies specifications as necessary to improve design features.

Ũ BACK

Nature of Assignment – Work consists of:

- reducing and refining functional requirements provided by customers to eliminate duplication; and
- grouping and categorizing requirements preliminary to the development of technical specifications.

What Needs To Be Done – The employee:

- works with customers in prioritizing and rating requirements according to their relative importance and urgency; and
- works closely with applications developers and data management specialists in mapping requirements to specifications.

Difficulty and Originality Involved – The employee:

- evaluates functional requirements for feasibility; and
- recommends modifications to improve the functionality of proposed applications.

Ũ BACK

Level 4-4: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of the full range of applications development activities for major software projects.

What Needs To Be Done – The employee:

- identifies system objectives, functions, and customer requirements;
- evaluates hardware and software alternatives and systems design strategies based on need and availability;
- analyzes existing systems capabilities, compatibility, and interoperability;
- prepares technical specifications;
- monitors development;
- designs and monitors testing; and
- conducts post-installation evaluation.

Projects usually involve balancing competing requirements, integrating multiple technologies, and coordination with network, security, and data management specialists to ensure security, privacy, and interoperatability.

Difficulty and Originality Involved – The employee establishes troubleshooting procedures and documents solutions to common problems for reference by other specialists.

Ũ BACK

Nature of Assignment – Work consists of analyzing work processes and operations to determine the feasibility of developing new or upgrading existing systems to improve the efficiency and productivity of business processes.

What Needs To Be Done – The employee:

- develops and presents automation options to management that take into account time, cost, and resource availability;
- finalizes requirements, prepares design documents, writes code, and tests, implements, and maintains applications; and
- makes decisions at various stages in the process including recommending software; e.g., COTS vs. customized applications, determining technical training requirements, defining the number of programs and program interfaces, and developing production procedures.

Difficulty and Originality Involved – The employee:
facilitates active customer involvement throughout the design and development process; and
ensures that changing customer requirements are addressed.

Ũ BACK

Nature of Assignment – Work consists of developing, implementing, and providing guidance in the application of standards, methods, and procedures for software testing.

What Needs To Be Done – The employee:

- analyzes current operating procedures;
- develops new or supplemental guidance to improve the quality of the testing process and the reliability and predictability of test results; and
- develops metrics and benchmarks for use by systems analysts and applications developers in evaluating the adequacy of test plans and test data.

Difficulty and Originality Involved – The employee is responsible for ensuring that testing methods and procedures are updated to adopt improvements in software testing technology.

Ũ BACK

Level 4-4: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of resolving the most difficult customer support requests; e.g., those involving integration or configuration related issues. Systems supported involve a wide variety of different platforms, operating systems, applications, and desktop configurations.

What Needs To Be Done – The employee:

- identifies and breaks down problems using structured problem resolution approaches; and
- works with network specialists, applications developers, and security specialists to prevent recurring problems.

Difficulty and Originality Involved – The employee is responsible for documenting solutions to problems and for recommending fundamental changes to systems configurations to prevent recurrences.

Ũ BACK

Nature of Assignment – Work consists of maintaining the problem resolution knowledge database.

What Needs To Be Done – The employee:

- reviews proposed additions to the database;
- approves resolutions that are most likely to be used on a regular basis;
- reviews the contents of the database on a regular basis to clear duplicate and outdated responses;
- trains new specialists in using the database; and
- investigates and recommends purchase of improved knowledge base tools and technologies.

Difficulty and Originality Involved – The employee is responsible for evaluating usage patterns and recommending methods for improving the functionality of the problem resolution knowledge base.

Ũ BACK

Level 4-4: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of enhancing database management practices, such as implementing new database structures and formats and converting legacy data to new formats.

What Needs To Be Done – The employee decides on the most effective technical methods and approaches based on an in-depth knowledge of, and skill in applying, database management concepts and a comprehensive understanding of the data management needs of customer organizations

Difficulty and Originality Involved – The employee:

- analyzes performance data;
- researches alternative technical solutions; and
- modifies systems and database configurations to correct problems that affect the confidentiality, integrity, and availability of data.

Ũ BACK

(continued)

Level 4-4: Information Technology Specialist (Data Management), GS-2210 (continued)

Nature of Assignment – Work consists of developing user manuals and instructions that guide customers in executing data access functions such as running queries and reports.

What Needs To Be Done – The employee determines the need to revise user guides based on changes to database functions and customer needs.

Difficulty and Originality Involved – The employee uses originality in writing instructions that are:

- understandable to audiences with varying levels of computing skills; and
- compatible with different data delivery and access methods.

Ù BACK

Nature of Assignment – Work consists of designing the logical data relationships and query structures of new databases considering factors such as access methods, access frequency, storage media, data volatility, query requirements, and operating environments.

What Needs To Be Done – The employee:

- describes the organization, format, and database content;
- documents standard data elements within the logical structure; and
- determines physical storage requirements based on analysis of volume, size of records and files, expected growth, access methods, and available data compression methods.

Difficulty and Originality Involved – The employee is required to coordinate implementation of database designs and modifications of design characteristics in response to performance problems, changing requirements, or new design methods.

Ù BACK

Level 4-4: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of providing a variety of services that deliver information using the Internet.

What Needs To Be Done – The employee evaluates and recommends the most effective uses of Internet technologies that may range from creating dynamic Web pages to linking relational databases with Web servers.

Difficulty and Originality Involved – The employee encounters difficulty as a result of the need to:

- evaluate and apply advances in Internet technology;
- manage customer expectations; and
- ensure consideration of relevant security and accessibility and authentication issues.

Ù BACK

Nature of Assignment – Work consists of managing and optimizing Internet protocol (IP) servers to ensure high availability and optimal performance of the organization's Web site.

What Needs To Be Done – The employee selects and applies load-balancing tools in an effort to provide faster throughput, increase server link resiliency, and enhance reliability.

Difficulty and Originality Involved – The employee is required to determine when to reconfigure and upgrade IP servers in response to changing customer usage patterns and server capacity management considerations.

Ù BACK

Level 4-4: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of serving as local area network (LAN) administrator.

What Needs To Be Done – The employee:

- coordinates installation, maintenance, troubleshooting, and fine-tuning of the LAN including all hardware, software, telecommunications, and networking components;
- develops plans and designs for network modifications and enhancements;
- ensures confidentiality, integrity, and availability of systems and data accessible on the LAN;
- reviews proposed applications for compatibility and interoperability;
- analyzes LAN utilization statistics, performance measures, and system profiles to ensure network robustness;
- identifies potential performance or capacity problems and plans for changes to avert problems; and
- analyzes systems malfunctions and implements necessary corrective actions.

Difficulty and Originality Involved – The employee exercises independent judgment in resolving the wide variety of problems that are encountered in managing the network, including making decisions on issues where there is often conflicting and incomplete information.

Ũ BACK

Nature of Assignment – Work consists of implementing security guidelines to protect network infrastructures; e.g., router packet filtering and firewall configuration.

What Needs To Be Done – The employee:

- provides guidance to network administrators in implementing procedures;
- conducts periodic reviews for procedural compliance;
- initiates updates to existing procedures to meet new requirements;
- implements new network technologies; and/or
- responds to network security challenges.

Difficulty and Originality Involved – The employee is required to:

- ensure that guidelines are kept current;
- respond to changes in network infrastructures; and
- apply advances in network security technology.

Ũ BACK

Level 4-4: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of installing, testing, and implementing vendor-supplied modifications to existing systems software.

What Needs To Be Done – The employee:

- tests and validates the operating environment;
- designs input and output forms and documents;
- explains the effects of modifications in the environment to applications developers, data management specialists, and customer support specialists; and
- troubleshoots problems resulting from modifications.

Difficulty and Originality Involved – The employee independently determines the feasibility of installing modifications and schedules implementation to ensure continuity of operations.

Ũ BACK

Nature of Assignment – Work consists of monitoring performance data and modifying systems tuning parameters to optimize overall systems performance and correct and prevent problems with the systems environment.

What Needs To Be Done – The employee interprets and evaluates performance data and isolates potential sources of performance problems.

Difficulty and Originality Involved – The employee decides on the most effective approaches for optimizing software performance and analyzes performance data and operating conditions to:

- troubleshoot and correct current problems; and
- anticipate future problems.

Ũ BACK

Level 4-4: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of analyzing and evaluating a portion of the enterprise IT capital investment portfolio.

What Needs To Be Done – The employee:

- recommends adjustments to funding priorities in response to changes in business requirements;
- conducts periodic analysis of projects in the portfolio for consistency with the overall IT architecture and infrastructure and relative contributions to meeting business requirements;
- prioritizes projects according to IT program plans, goals, and objectives;
- prepares recommendations for an investment review board or similar approval authority; and
- implements decisions.

Difficulty and Originality Involved – The employee is required to:

- monitor changes in the organization's business plans; and
- initiate analysis of the impact of changes on the assigned portfolio.

Ũ BACK

(continued)

Level 4-4: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Nature of Assignment – Work consists of developing training plans for the organization's IT workforce.

What Needs To Be Done – The employee assesses and analyzes training needs that address current competency gaps as well as new competency requirements that will:

- ensure alignment with the organization's mission, goals, objectives, and plans; and
- enhance the effectiveness of the IT workforce.

The employee also evaluates and recommends training sources.

Difficulty and Originality Involved – The employee is required to keep abreast of changes in the organization's mission to ensure that changing requirements are addressed in training plans.

Ũ BACK

Nature of Assignment – Work consists of conducting audits of IT systems' development, operations, and management to ensure:

- agency compliance with all applicable laws and regulations;
- necessary controls are in place; and
- systems operate as intended and provide all necessary capabilities.

What Needs To Be Done – The employee:

- reviews systems documentation, including IT project implementation plans, security policies and procedures, hardware, software, and network diagrams and configuration management controls, database administration controls, and contractual agreements for technical support for compliance with applicable standards;
- interviews agency officials and contractors responsible for systems; and
- assesses whether user requirements are being met by the agency's IT systems.

Difficulty and Originality Involved – The employee is responsible for presenting audit findings to program officials and for developing recommendations for improvements in IT management, where appropriate.

Ũ BACK

Level 4-4: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of implementing and maintaining IT security systems that are applied to a variety of applications.

What Needs To Be Done – The employee:

- assesses the security effectiveness of installed systems based on analysis of reported security problems;
- implements modifications to minimize vulnerabilities;
- troubleshoots security threats and vulnerabilities in response to incident reports;
- identifies and isolates problem sources; and
- recommends solutions or corrects problems.

Difficulty and Originality Involved – The employee is responsible for continually evaluating and recommending the adoption of new IT security methods that will enhance capabilities.

Ũ BACK

(continued)

Level 4-4: Information Technology Specialist (Security), GS-2210 (continued)

Nature of Assignment – Work consists of developing standard operating procedures and user guides that provide detailed instructions for implementing systems security policies.

What Needs To Be Done – The employee determines the need for new or updated guidance based on policy and technology changes.

Difficulty and Originality Involved – The employee:

- anticipates the need for changes to avert potential systems, data, or network exposure; and
- encounters difficulty in gaining management acceptance of more restrictive security policies where required.

Ũ BACK

Nature of Assignment – Work consists of providing guidance, assistance, and coordination to systems developers, systems administrators, and other IT specialists to ensure the proper and timely implementation of systems security standards for systems both under development and already deployed.

What Needs To Be Done – The employee monitors, evaluates, and reports on the status and condition of security programs and directs corrective actions to eliminate or reduce risks.

Difficulty and Originality Involved – The employee is required to carry out in-depth analyses of systems development plans to ensure that:

- security requirements and specifications are effectively implemented; and
- security features are sufficiently rigorous to provide adequate levels of protection throughout the systems life cycle.

Ũ BACK

Level 4-4: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of planning and coordinating the maintenance, upgrade, and support of servers.

What Needs To Be Done – The employee:

- schedules maintenance activities during off-peak usage periods;
- resolves problems, such as defective hardware components or corrupted software;
- runs tests to verify operability and functionality; and
- implements systems security plans and policies and preventive maintenance schedules.

Difficulty and Originality Involved – The employee is required to evaluate and recommend the adoption of improvements in server management technologies.

Ũ BACK

(continued)

Level 4-4: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Nature of Assignment – Work consists of monitoring and managing the operation of a complex, networked environment with a large number of customers.

What Needs To Be Done – The employee:

- oversees installation, implementation, configuration, maintenance, and support of network components;
- conducts functional and connectivity testing to ensure continuing operability;
- provides ongoing optimization and problem solving support;
- achieves recovery from systems malfunctions and security intrusions; and
- develops network usage policies and procedures.

Difficulty and Originality Involved – The employee is required to maintain a high degree of technical proficiency in implementing and supporting a variety of hardware and software systems.

Ũ BACK

Nature of Assignment – Work consists of analyzing usage and audit logs to ensure that systems are operating within design parameters and comply with security policies.

What Needs To Be Done – The employee applies performance measurement techniques and metrics and, based on results, recommends configuration changes, reallocation of resources, or upgrading network operating systems to enhance performance.

Difficulty and Originality Involved – The employee is required to exercise initiative in identifying and recommending potential areas for enhancing systems reliability and functionality.

Ũ BACK

Level 4-4: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of the end-to-end development of design specifications for new applications.

What Needs To Be Done – The employee leads and integrates the efforts of a design team in accomplishing individual components of the development efforts.

Difficulty and Originality Involved – The employee is required to:

- work closely with the applications development team and customers throughout the software design process; and
- coordinate the modification of specifications as required.

Ũ BACK

(continued)

Level 4-4: Information Technology Specialist (Systems Analysis), GS-2210 (continued)

Nature of Assignment – Work consists of analyzing work activities to determine the feasibility of developing new applications to meet customer business requirements.

What Needs To Be Done – The employee:

- works with program representatives to:
  - identify and specify requirements;
  - identify specific operations, processes, transactions, data, and work products adaptable to automation; and
  - develop specifications for inputs and outputs, systems interfaces, and other design features;
- uses available tools, techniques, and standards to produce detailed systems specifications, prepare test plans, and define acceptance criteria;
- evaluates alternatives for application development (i.e., contractor vs. Government performance) and recommends actions based on time, cost, and quality; and
- participates in systems integration testing and applies test results to modify specifications and correct problems and faults as necessary.

Difficulty and Originality Involved – The employee is required to troubleshoot complex design problems during the entire systems development life cycle.

Ũ BACK

Level 4-5: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of leading teams that design and develop agency-wide applications.

What Needs To Be Done – The employee:

- reviews and approves technical requirements for projects;
- develops project plans;
- provides technical guidance to team members; and
- serves as primary liaison between customers and vendors and IT management throughout the development process.

Difficulty and Originality Involved – The employee is required to ensure that applications are thoroughly tested and documented and that security certifications are obtained prior to deployment.

Ũ BACK

Level 4-5: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of leading quick response teams in responding to customer service problems resulting from catastrophic events such as virus infections or power outages.

What Needs To Be Done – The employee:

- consults with experts in other specialty areas to develop integrated action plans;
- issues technical bulletins via the intranet to inform customers of problems and to instruct them in taking necessary actions; and
- develops and updates customer support policies and procedures to ensure appropriate responses to future incidents of a similar nature.

Difficulty and Originality Involved – The employee is required to coordinate actions with interagency infrastructure protection groups.

Ũ BACK

Nature of Assignment – Work consists of serving as client manager with responsibility for working directly with customer organizations to customize services to meet specific customer requirements.

What Needs To Be Done – The employee:

- explores ways to upgrade or enhance the level of services provided;
- implements changes in response to changes in customer requirements; and
- resolves issues related to the delivery of services.

Difficulty and Originality Involved – The employee is required to keep abreast of changes in customer mission requirements through interaction with management in customer organization and to initiate service modifications to meet changing requirements.

Ũ BACK

Nature of Assignment – Work consists of participating on applications development teams to ensure that customer service requirements are addressed during the systems development process from translation of functional requirements through systems testing.

What Needs To Be Done – The employee:

- reviews technical and design specifications;
- recommends changes, as needed, to address customer support requirements;
- develops specifications for user instruction manuals based on customer's needs; and
- defines procedures for providing post-implementation support.

Difficulty and Originality Involved – The employee is required to negotiate with other senior members of the applications development team to ensure applications are customer oriented.

Ũ BACK

Level 4-5: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of developing logical data models to be translated into workable physical database schema and structures in the database development process.

What Needs To Be Done – The employee:

- selects modeling methodologies and tools (e.g., CASE data modeling products);
- generates models that are capable of accommodating new and unanticipated business requirements and processes;
- verifies model integrity; and
- maintains and revises existing models.

Difficulty and Originality Involved – The employee is required to:

- anticipate changes in business requirements;
- ensure that data models are capable of responding to changing requirements; and
- adapt modeling tools and approaches to meet the unique requirements of the assignment.

Ù BACK

Nature of Assignment – Work consists of designing and implementing enterprise database strategies for functions such as backup, recovery and migration or to correct extremely complex operational and performance problems.

What Needs To Be Done – The employee:

- evaluates current and future enterprise database requirements;
- develops strategies designed to meet requirements;
- issues strategies in draft format for developer, administrator, and customer review; and
- incorporates relevant comments and suggestions.

Difficulty and Originality Involved – The employee is required to coordinate implementation of new database strategies on an enterprise-wide basis including defining implementation plans and actions and interpreting strategies as required.

Ù BACK

Level 4-5: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of planning, designing, developing, testing, implementing, and managing internal and external Web sites to optimize communication with relevant clientele.

What Needs To Be Done – The employee:

- maps overall Web design and structure;
- ensures Web site functionality, integrity, and security;
- reviews and integrates new Web pages;
- analyzes Web site statistics; and
- directs on-going maintenance and enhancement efforts.

Difficulty and Originality Involved – The employee provides technical consultation in the development of Web-based applications including Web-based database management projects. The work may also involve leadership of a multi-disciplinary Web site team of Government employees and contractors to develop solutions for major new Web initiatives.

Ũ BACK

Nature of Assignment – Work consists of evaluating new Internet technologies and capabilities that will enhance the functionality of Internet-based applications deployed by the organization.

What Needs To Be Done – The employee:

- researches new technologies;
- conducts comprehensive evaluations based on current and future organizational requirements; and
- prepares and presents position papers proposing adoption of promising new developments.

Difficulty and Originality Involved – The employee encounters difficulty when planing and coordinating pilot testing and eventual implementation of successfully tested technologies on an enterprise-wide basis.

Ũ BACK

Level 4-5: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of serving as local area network (LAN) manager for enterprise LAN systems.

What Needs To Be Done – The employee:

- identifies and controls all LAN hardware and software configuration;
- develops technical standards and procedures for LAN development, implementation, and management;
- establishes performance management metrics; and
- evaluates overall LAN performance against relevant standards.

The work also involves providing technical advice and consultation to LAN administrators throughout the organization.

Difficulty and Originality Involved – The employee is required to:

- keep abreast of the rapid evolution of networking technologies;
- maintain continual vigilance against threats to network confidentiality, integrity and availability; and
- constantly leverage scarce resources.

Ũ BACK

(continued)

Level 4-5: Information Technology Specialist (Network Services), GS-2210 (continued)

Nature of Assignment – Work consists of assigning and coordinating the work of a multi-disciplinary team in diagnosing sources of service interruptions and developing and implementing affirmative responses.

What Needs To Be Done – The employee leads team efforts to:

- quickly and accurately isolate sources of service problems;
- identify and implement required corrective actions; and
- devise solutions to prevent future interruptions.

Difficulty and Originality Involved – The employee is responsible for informing management of progress and for recommending actions to avert future challenges to the integrity and availability of the network.

Ũ BACK

Level 4-5: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of managing major changes to the systems environment; e.g., implementation of major new applications or conversion to new operating systems.

What Needs To Be Done – The employee:

- plans and coordinates change activities with applications developers, telecom specialists, facilities managers, vendors, and customers;
- manages implementation and deployment; and
- keeps senior management informed of project progress through periodic briefings and reports.

Difficulty and Originality Involved – The employee is required to resolve virtually all technical and management problems including resource issues such as schedule delays and cost overruns.

Ũ BACK

Level 4-5: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of representing the agency on interagency committees.

What Needs To Be Done – The employee is responsible for articulating and defending agency positions on critical policy issues, and briefing senior agency management on the status of committee activities.

Difficulty and Originality Involved – The employee makes decisions on whether to accept compromises of agency positions.

Ũ BACK

(continued)

Level 4-5: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Nature of Assignment – Work consists of leading major agency-wide IT policy development efforts.

What Needs To Be Done – The employee:

- directs work assigned to a project team and reviews and refines final products prior to submission to management; and
- coordinates policy dissemination, manages policy maintenance, and develops mechanisms to measure policy effectiveness and compliance.

Difficulty and Originality Involved – The employee is required to:

- continually evaluate the effectiveness of the current IT policy framework; and
- recommend changes that will ensure alignment with the agency's mission requirements.

Ù BACK

Nature of Assignment – Work consists of updating strategic plans for the IT program.

What Needs To Be Done – The employee:

- meets with IT managers to discuss progress toward meeting strategic goals;
- identifies potential problems in attaining goals; and
- reviews agency strategic plans to ensure that plans for the IT program are integrated with agency strategic goals.

Difficulty and Originality Involved – The employee is required to apply a high degree of initiative in anticipating the effects of changing business requirements and new technologies on strategic plans for the IT program.

Ù BACK

Level 4-5: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of establishing, implementing, and interpreting the requirements for agency compliance with higher level policy directives and Executive orders governing infrastructure protection.

What Needs To Be Done – The employee:

- coordinates the review and evaluation of the agency infrastructure protection program, including policies, guidelines, tools, methods, and technologies;
- identifies current and potential problem areas;
- updates or establishes new requirements; and
- makes recommendations for a fully compliant infrastructure protection program to be implemented throughout the agency.

Difficulty and Originality Involved – The employee is responsible for monitoring agency compliance with infrastructure protection requirements across IT programs and for adjusting program guidelines in response to changing technologies.

Ù BACK

Level 4-5: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of exercising overall responsibility for the continuing health of all NT servers in the enterprise LAN.

What Needs To Be Done – The employee develops standards and criteria for assessing server performance and oversees their application by administrators throughout the enterprise LAN.

Difficulty and Originality Involved – The employee is responsible for developing performance standards that can be applied uniformly throughout the LAN and for identifying actions required to correct performance deficiencies.
Ũ BACK

Nature of Assignment – Work consists of developing procedures for responding to new threats to systems confidentiality, integrity, and availability; e.g., checking key files for problems and reviewing running operations to ensure that only authorized processes are running.

What Needs To Be Done – The employee oversees the agency-wide implementation of new procedures and interprets procedures in response to questions received from other systems administrators.

Difficulty and Originality Involved – The employee is required to provide technical guidance to systems administrators throughout the agency in responding to serious systems threats.
Ũ BACK

Level 4-5: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of planning and coordinating agency-wide implementation of process improvement methods and concepts to improve the quality of software products.

What Needs To Be Done – The employee:

- serves as the principal advocate within the agency for the application of process improvement concepts and practices; and
- consults with senior specialists and IT mangers throughout the agency in the implementation of process improvement practices.

Difficulty and Originality Involved – The employee is responsible for advocating the benefits of implementing business-driven quality and process improvement approaches.
Ũ BACK

Nature of Assignment – Work consists of developing and standardizing systems design methods.

What Needs To Be Done – The employee:

- identifies and evaluates highly effective systems design methodologies and benchmarks best practices from industry and other government organizations;
- develops and tests prototypes;
- evaluates test results; and
- selects methods that will result in quality design and high customer satisfaction.

Difficulty and Originality Involved – The employee is responsible for championing the implementation of standardized methods throughout the agency.
Ũ BACK

APPENDIX F5 – FACTOR 5 ILLUSTRATIONS

Level 5-2: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves maintaining an assigned module of code for a deployed application. Changes to the code are made according to well-established procedures. The employee also debugs newly added code.

Effect of the Work – Work ensures that applications supported by the organization operate effectively.
Ù BACK

Level 5-2: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves responding to customer requests that are covered by the problem resolution database. The work also provides the employee with the training and experience needed to respond to more complicated requests.

Effect of the Work – Work provides the customers with assistance in the effective use of a wide range of applications.
Ù BACK

Level 5-2: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves maintaining one or more databases for an organization according to a standard maintenance plan. The employee also reviews usage transaction logs and identifies trends that may require action.

Effect of the Work – Work is important to the effective management of data used for a variety of business functions.
Ù BACK

Level 5-2: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves reviewing new and modified Web pages for proper formatting and consistency with the organization's Web site guidelines and accepted standards. The employee answers routine inquiries and corrects basic technical problems related to the maintenance of the Web site; e.g., repairing source code.

Effect of the Work – Work contributes to the organization's ability to provide timely information about its services to the public via the Internet.
Ù BACK

Level 5-2: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves providing assistance in maintaining basic network services, such as domain name services, assignment of IP addresses, firewall and other security services, network printing, remote access, file and directory sharing, and the like.

Effect of the Work – Work contributes to the sustained delivery of vital network services.
Ù BACK

(continued)

Level 5-2: Information Technology Specialist (Network Services), GS-2210 (continued)

Scope of the Work – Work involves monitoring network traffic to identify deviations from traffic parameters. The employee reports potential traffic problems to a more experienced network specialist and assists in implementing problem resolutions.

Effect of the Work – Work contributes to maintaining network operations.
Ù BACK

Level 5-2: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work consists of maintaining technical manuals, procedures, and customer instructions for systems software in a cross-platform production environment.

Effect of the Work – Work ensures current, accurate, and complete documentation needed by other technical specialists and customers.
Ù BACK

Level 5-2: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves taking vulnerability scans and ensuring that responsible areas have responded appropriately to findings.

Effect of the Work – Work contributes to reducing or eliminating vulnerabilities and complying with security regulations and policies.
Ù BACK

Scope of the Work – Work involves assisting in the preparation of systems security alerts that warn systems administrators of potential viruses, intrusions, or other systems security threats. The work also involves maintaining a searchable archive of previous security alerts.

Effect of the Work – Work contributes to the protection of network systems and data from unwarranted access.
Ù BACK

Level 5-2: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves managing the software inventory to ensure compliance with licensing agreements.

Effect of the Work – Work affects the organization's ability to comply with legal requirements related to the use of commercial software.
Ù BACK

Scope of the Work – Work involves executing systems backups on a regular schedule under the direction of more experienced specialists.

Effect of the Work – Work ensures the organization's ability to continue operations in case of systems failure.
Ù BACK

Level 5-2: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves applying standard practices in developing information about customer requirements.

Effect of the Work – Work enables more experienced specialists to accurately identify and specify business requirements that lead to the production of quality software.

Ũ BACK

Level 5-3: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work consists of writing applications, according to technical specifications, using a variety of applications programming languages and programming tools, such as CASE tools. The employee also participates in the planning and execution of unit and systems testing, installing programs at customer sites, providing support on execution problems, and modifying applications as necessary.

Effect of the Work – Work results in the development and delivery of applications that enhance the performance of customer business activities.

Ũ BACK

Scope of the Work – Work consists of customizing commercial software applications to meet specific customer business requirements. This includes evaluating and recommending the purchase of software programs that partially match technical specifications, modifying code, testing functionality, coordinating installation and implementation, and maintaining customizations across new releases.

Effect of the Work – Work results in the modification of applications that enhance the performance of customer business activities.

Ũ BACK

Level 5-3: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves resolving a full range of customer problems including problems that are referred from a lower level. The work also involves training customers and less experienced customer support employees in the use of systems and applications supported by the customer support organization.

Effect of the Work – Work results in the resolution of complex problems that enables customers to be more productive in carrying out assignments by minimizing downtime.

Ũ BACK

Level 5-3: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves implementing, maintaining, and updating databases. The work may also involve diagnosing and correcting database access and availability, reliability, and security problems.

Effect of the Work – Work ensures the organization has access to current information that is stored cost-effectively and securely.

Ũ BACK

(continued)

Level 5-3: Information Technology Specialist (Data Management), GS-2210 (continued)

Scope of the Work – Work involves participating in the migration of production databases; e.g., to newer versions, according to established migration plans and strategies. The employee performs a broad scope of functions including running migration utilities, writing scripts, and preparing documentation. The employee also updates backup, restoration, and recovery procedures and user guides as necessary.

Effect of the Work – Work results in enhancements in the availability, accessibility, and reliability of databases used by the organization for a variety of key business functions.
Ù BACK

Scope of the Work – Work involves performing routine database administration functions such as developing queries and reports based on customer requirements, modifying or developing database views, and managing backup and recovery operations.

Effect of the Work – Work results in the availability and usefulness of the data for the customer organization.
Ù BACK

Level 5-3: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves monitoring and ensuring the operability of intranet services that provide intranet customers with access to applications and data. The employee implements the intranet deployment strategy, configures, monitors, and fine-tunes dedicated servers, coordinates the implementation of new services, analyzes site statistics, troubleshoots problems, identifies trends that may require action such as increasing bandwidth, and participates in planning for enterprise growth.

Effect of the Work –Work provides employees with the capability to improve productivity using systems and applications available on the intranet.
Ù BACK

Level 5-3: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves installing, configuring, and maintaining network hubs, switches, routers, and servers that support a wide-area network. The employee is required to optimize and fine tune performance, troubleshoot problems ranging from common to complex, and evaluate and recommend upgrades and enhancements to the current network infrastructure.

Effect of the Work – Work ensures that the organization's network is able to provide a wide range of services that are vital to the accomplishment of mission requirements.
Ù BACK

Scope of the Work – Work involves performing a wide range of tasks in support of network administration including managing user accounts, monitoring service levels, and troubleshooting and restoration. The work also involves analyzing the impact of new applications, new customers, or other changes on network performance.

Effect of the Work – Work supports efforts to continually enhance network efficiency and reliability.
Ù BACK

Level 5-3: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work involves installing and validating systems software patches and fixes provided by vendors. The employee runs tests to ensure functionality and interoperability within the systems environment, identifies faults, and ensures that vendors correct problems.

Effect of the Work – Work contributes to providing a reliable systems environment.

Ù BACK

Level 5-3: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves modifying established IT plans and policies in response to new legislation, regulations, directives, or other guidance affecting the IT program. The employee evaluates the impact of new guidance on current programs and recommends changes to existing plans and policies to ensure compliance and responsiveness.

Effect of the Work – Work affects the ability of the organization to maintain a current and responsive planning and policy framework.

Ù BACK

Level 5-3: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves installing, implementing, and maintaining firewall services that prevent unauthorized access to the organization's Web site. The work also involves recommending modifications to existing firewall hardware and software based on analyses of incident reports.

Effect of the Work – Work contributes to the protection of the infrastructure from unauthorized access.

Ù BACK

Scope of the Work – Work involves responding to systems security incidents reported by customers and network administrators; e.g., corrupted data, inaccessible files, virus infections, loss of confidentiality, authentication problems, and the like. The employee analyzes incident reports, interviews customers as needed, isolates potential sources, and recommends solutions to a more experienced specialist.

Effect of the Work – Work contributes to ensuring confidentiality, integrity, and availability of systems, networks, and data.

Ù BACK

Level 5-3: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves maintaining the functionality and availability of systems. This includes maintaining, optimizing, and troubleshooting server hardware and software, reviewing server loads and recommending server load balancing, and implementing and verifying systems backup and restoration.

Effect of the Work – Work affects the availability of systems used by employees at all levels in the organization to effectively accomplish critical business processes .

Ù BACK

Level 5-3: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves leading group discussions with functional customers to elicit, identify, and specify requirements for the development of new applications software. The employee works with customers in evaluating and reducing the list of functional requirements to those considered to be most important. The work also involves assisting applications developers in translating or mapping functional requirements to technical specifications.

Effect of the Work – Work results in the development of clear and specific business requirements that lead to the development of systems that effectively serve customer needs.
Ù BACK

Scope of the Work – Work involves developing functional specifications for a Web-enabled tracking system. This includes translating customer business requirements into specifications that unambiguously describe the systems design to developers. The work also involves preparing test plans to ensure that implementation matches design and revising design specifications to respond to changes in requirements.

Effect of the Work – Work results in the delivery of reliable and cost-effective software products.
Ù BACK

Level 5-4: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves analyzing and translating technical specifications into integrated applications that automate business processes. The work also involves executing the life cycle change process of applications and implementing design changes in response to changes in customer functional requirements.

Effect of the Work – Work results in the reduction of costs and improvement of the quality of a wide range of customer business processes.
Ù BACK

Scope of the Work – Work involves:

- monitoring software development contracts to ensure compliance with specifications;
- planning and coordinating the testing, installation, and implementation of vendor provided software;
- conducting post implementation assessments to evaluate cost efficiency and performance; and
- monitoring configuration control.

Effect of the Work – Work ensures the delivery and deployment of vendor-developed software in accordance with cost and performance specifications.
Ù BACK

Level 5-4: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves developing, updating, and maintaining a comprehensive database of technical queries and corresponding resolutions. The work also involves providing group and individual training to other customer support specialists on technical issues and new technologies.

Effect of the Work – Work ensures that customer support services are provided effectively and responsively.
Ù BACK

Scope of the Work – Work involves resolving the complete range of problems within the scope of the help desk and referring problems requiring highly specialized expertise to the appropriate IT specialty office. The work also involves conducting trend analyses to identify areas where additional customer training and assistance is needed and initiating appropriate action, such as defining new training requirements.

Effect of the Work – Work enables employees throughout customer organizations to effectively apply information technology resources to accomplish mission requirements.
Ù BACK

Level 5-4: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves:

- designing, implementing, and maintaining multi-user databases;
- ensuring that databases meet the business requirements of client organizations, are accessible to authorized customers through the LAN, and are kept up-to-date;
- reviewing usage logs;
- determining the need for changes in access methods, storage media, or other elements based on usage and performance trends; and
- troubleshooting accessibility and availability problems; and
- initiating corrective actions.

Effect of the Work – Work enables the organization to manage information in a highly efficient and effective manner.
Ù BACK

Scope of the Work – Work involves designing physical data models that describe the structure for data storage, data indexing, data manipulation, and data retrieval applications. The employee selects database management software, defines hardware requirements, and determines whether databases will be relational or object oriented.

Effect of the Work – Work ensures that databases are designed and developed in a way that ensures quality and reliability in meeting customers' business requirements.
Ù BACK

Level 5-4: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves developing and refining Internet services (e.g., Web sites, list servers, and FTP sites) and consulting with program specialists in developing new services or enhancing existing services that expand current information dissemination capabilities.

Effect of the Work – Work facilitates the efficient delivery of program information to clients and the exchange of information between the organization and other organizations interested in or affected by the information.
Ù BACK

Scope of the Work – Work involves:

- serving as a technical specialist in the application of Internet technologies to meet the needs of functional customers;
- leading or participating on teams responsible for the planning, design, development, testing, integration, and deployment of Web-based applications that interface with varied configurations of hardware and software; and
- evaluating, recommending, developing, and maintaining software tools and utilities that support development and maintenance of Web applications and interfaces.

Effect of the Work – Work contributes directly to customers' ability to manage mission critical information.
Ù BACK

Level 5-4: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves serving as LAN manager with responsibility for defining and executing the broad scope of work required to ensure the continuous availability of the organization's LAN.

Effect of the Work – Work enables the organization to sustain critical business operations using networked systems.
Ù BACK

Scope of the Work – Work involves leading a major network project such as reestablishing connectivity for relocated employees, accommodating disabled employees, and implementing telecommuting activities. Responsibilities include developing project plans, assigning and prioritizing the work of other network specialists, and overseeing the implementation of project activities.

Effect of the Work – Work ensures the timely and resource-efficient accomplishment of critical network projects that enhance network capabilities and services.
Ù BACK

Level 5-4: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work involves:

- planning and coordinating the installation, configuration, and implementation of major hardware or software upgrades to the systems environment;
- overseeing testing and migration to the production environment, ensuring minimal disruption to current operations; and
- advising customer support specialists in providing post-implementation support to end-users.

Effect of the Work – Work affects the program's ability to make major enhancements to the systems environment in a manner that is not disruptive to customers.

Ũ BACK

Scope of the Work – Work involves:

- serving as a systems engineering expert on an applications development project;
- ensuring the appropriate configuration of the operating environment; and
- ensuring the allocation of sufficient systems resources to support new applications.

Effect of the Work – Work ensures that new applications are integrated seamlessly within the current systems environment.

Ũ BACK

Scope of the Work – Work involves:

- monitoring and fine-tuning the systems environment to ensure optimal performance; and
- recommending efficient ways to improve performance such as modifying operating systems parameters.

Effect of the Work – Work results in the optimization of the systems environment that supports the execution of a wide variety of mission-oriented applications.

Ũ BACK

Level 5-4: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves reviewing IT programs to determine overall compliance with IT plans and policies.

Effect of the Work – Work affects the organization's ability to effectively incorporate information technology in meeting its core business requirements.

Ũ BACK

Scope of the Work – Work involves modifying IT plans and policies to respond to changes in the organization's business requirements and processes or changes in legislation or regulatory requirements.

Effect of the Work – Work affects the effectiveness of plans and policies that serve as guideposts for the successful application of IT to the organization's mission.

Ũ BACK

(continued)

Level 5-4: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Scope of the Work – Work involves:

- auditing requirements for IT computer systems including specifications for individual systems and agency policies and procedures for specific IT functions such as security or systems development;
- analyzing user requirements, system documentation, and operational conditions to determine if the system meets business and mission needs and is operating as intended;
- working in a team environment to reach consensus on how/if the agency's IT systems meet established performance measures or goals; and
- working directly with an audit manager in the preparation and delivery of presentations to management on audit findings.

Effect of the Work – Work provides valuable feedback to agency management on the effectiveness of their IT investments and management practices.

Ũ BACK

Level 5-4: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves:

- analyzing and defining the security requirements for new enterprise applications available on the organization's intranet;
- selecting, installing, and monitoring the performance of appropriate security tools, including firewalls, intrusion detection systems, and vulnerability self-assessment programs; and
- troubleshooting IT security problems that affect the availability of intranet applications and recommending actions that will minimize risks.

Effect of the Work – Work results in the continuing accessibility and availability of a variety of mission critical applications.

Ũ BACK

Scope of the Work – Work involves developing, implementing, and administering a security program consisting of standards, procedures, and guidance designed to protect information available on a major area-wide network from unauthorized access.

Effect of the Work – Work ensures protection of the organization's IT assets through effective network security.

Ũ BACK

Level 5-4: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves developing and presenting training on the operation and maintenance of new systems to the IT staff including specialists in a variety of specialty areas.

Effect of the Work – Work ensures that new systems are properly managed.

Ũ BACK

(continued)

Level 5-4: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Scope of the Work – Work involves:

- adapting and implementing systems diagnostic and maintenance tools to ensure the availability and functionality of systems required to support organizational objectives; and
- evaluating and recommending selection of new systems diagnostic tools.

Effect of the Work – Work affects the availability of systems needed to meet the organization's business requirements.

Ũ BACK

Level 5-4: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves:

- defining and validating the need for proposed new systems through consultation with program officials in customer program organizations;
- reviewing general business and functional requirements that support the need for systems;
- identifying and evaluating potential systems design approaches; and
- developing final technical specifications for new systems.

Effect of the Work – Work contributes the development of applications that improve the organization's efficiency in accomplishing a wide variety of functions and activities.

Ũ BACK

Scope of the Work – Work involves serving as an information systems member of a business process reengineering study. In this role the employee participates in:

- defining business processes and evaluating alternatives;
- identifying information technology solutions that will enable recommended process changes and improvements;
- writing business cases from a technical standpoint; and
- coordinating the implementation of improved information technology tools and practices that will foster continuous process improvement.

Effect of the Work – Work results in improvements in the efficiency and quality of business processes.

Ũ BACK

Level 5-5: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves:

- developing, adapting, and implementing new applications development methods and models that incorporate new technologies, such as object oriented design and analysis and software architecture;
- researching emerging technologies;
- planning, developing, and organizing pilot tests in controlled environments; and
- recommending adoption of new methodologies based on favorable feasibility analyses.

Effect of the Work – Work results in improvements in the design and development of applications that enhance the agency's ability to accomplish mission critical program activities.

Ũ BACK

Level 5-5: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves:

- researching and evaluating new customer service management systems;
- recommending purchase of systems where it is determined that they would enhance the quality and effectiveness of the customer support program;
- overseeing implementation of new systems and services; and
- developing training guides for customer support employees.

Effect of the Work – Work enhances the quality and responsiveness of customer support services which, in turn, contributes to the organization's ability to effectively apply information systems in meeting business and mission requirements.

Ũ BACK

Scope of the Work – Work involves:

- developing performance metrics to evaluate the efficiency and effectiveness of the customer support center and to apply results in increasing productivity and professionalism and improving service quality;
- integrating metrics within existing performance measurement systems; and
- guiding customer support supervisors and managers in their application.

Effect of the Work – Work provides the center with the capability to continually improve the quality and effectiveness of customer services and to develop strategies for achieving excellence in service delivery.

Ũ BACK

Level 5-5: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves:

- developing and maintaining enterprise data models that define the organization's information needs and business processes; and
- updating models to reflect major changes in business requirements and the introduction of new data management technologies.

Effect of the Work – Work enhances the organization's ability to manage data in a manner that contributes directly to the accomplishment of mission requirements.

Ũ BACK

Scope of the Work – Work involves:

- establishing and providing guidance in the application of standards and guidelines for the creation of metadata that address current and future needs;
- evaluating potential metadata applications;
- identifying and evaluating tools for creating metadata; and
- designing metadata model formats, and templates.

Effect of the Work – Work results in the application of effective approaches for describing data and informing potential customers of the value and applications of data being maintained.

Ũ BACK

Level 5-5: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves:

- developing Internet policies that establish parameters and guidelines for the agency-wide application of Internet technologies; and
- promoting the application of Internet throughout the agency as a means to more effectively accomplish critical business requirements.

Effect of the Work – Work ensures that the agency takes optimum advantage of Internet technologies to accomplish its mission.

Ū BACK

Scope of the Work – Work involves:

- participating in the planning, development, and implementation of an e-Government site used to deliver services to the public;
- coordinating the acquisition, installation, and configuration of the end-to-end infrastructure supporting the site; and
- ensuring the availability and security of applications installed on the site.

Effect of the Work – Work provides customer organizations with the ability to deliver mission critical services to a broad client base with optimum effectiveness.

Ū BACK

Level 5-5: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – The work involves:

- leading an enterprise level network project, such as establishing connectivity for new mission requirements or new customer organizations or accommodating changes in legislation; and
- carrying out the full range of project management functions from project planning through evaluation and reporting of project accomplishments.

Projects typically involve other network specialists, technical specialists from other disciplines, and customer representatives.

Effect of the Work – Work ensures the capability of the network services program to respond to new and changing requirements.

Ū BACK

Scope of the Work – Work involves:

- leading feasibility studies of new network technologies, such as integrating video with data and voice services;
- recommending investments in new networking technologies to senior agency management where warranted; and
- providing consultation during the planning and implementation of successfully tested new technologies.

Effect of the Work – Work ensures that the agency takes full advantage of advances in network technologies to enhance the delivery of services in support of mission requirements.

Ū BACK

Level 5-5: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work involves leading major operating systems projects such as migration to a new operating system that includes coordinating the contributions of software engineers, developers, vendor hardware and software specialists, and customer representatives.

Effect of the Work – Work ensures that the systems environment is conducive to meeting the current and future business requirements of customers with diverse needs.

Ũ BACK

Level 5-5: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves the assessment of the impact of forecasted changes in technology and business requirements on the agency's long-range IT investment plans and recommending appropriate changes to plans and strategies.

Effect of the Work – Work ensures the agency's ability to adapt to major changes in business models and technology that affect the accomplishment of the agency mission.

Ũ BACK

Scope of the Work – Work involves leading evaluations of the organization's business processes and IT infrastructure to determine the feasibility of adopting enterprise applications. The work also involves developing plans for implementing enterprise level applications.

Effect of the Work – Work affects the organization's ability to leverage available IT resources.

Ũ BACK

Scope of the Work – Work involves providing expert technical advice and guidance to senior management officials in the appropriate application of technology to agency mission and programs including providing advice regarding emerging IT issues and the impact of emerging issues on the agency business requirements.

Effect of the Work – Work enhances the agency's ability to make informed decisions on the focus and direction of IT planning and investment.

Ũ BACK

Level 5-5: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves integrating diverse server platforms into the existing architecture to increase and enhance the availability of applications and services throughout the agency.

Effect of the Work – Work enhances the agency's ability to effectively and efficiently apply the established IT architecture to accomplish vital business processes.

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(continued)

Level 5-5: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Scope of the Work – Work involves serving as the principal point-of-contact with external groups in the planning and coordination of efforts to enhance the agency's potential to interoperate across agency lines. The work also involves the development of policies and procedures that facilitate cross-agency systems interoperability.

Effect of the Work – Work enables the agency to manage critical business knowledge effectively, efficiently, and securely.

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Level 5-5: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves evaluating the feasibility and applicability of new systems design methodologies and presenting recommendations for the approval of new methodologies with complete implementation plans where appropriate.

Effect of the Work – Work results in the continuous evaluation of new technologies that lead to improvements in the systems design and development process and the delivery of high quality information systems that support achievement of core agency mission requirements.

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Scope of the Work – Work involves leading multiple design teams in the development of systems specifications for major new applications. The work encompasses all phases of the design process from requirement analysis to post-implementation support.

Effect of the Work – Work results in the development of well-designed systems that support the accomplishment of strategic business requirements.

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APPENDIX G – INFORMATION TECHNOLOGY GLOSSARY

The following are commonly used information technology (IT) terms. This list is by no means exhaustive and will be updated periodically to reflect changes in the IT field.

ACCESSIBILITY – The process for ensuring that users have access to all content on Web pages.

APPLICATION – A program or group of programs designed for end users. Applications software includes database programs, word processors, and spreadsheets.

ARCHITECTURE – A design for a computer system that defines its broad outlines. The architecture may also define specific hardware and software components and how they work together.

AUTHENTICATION – The verification of the identity of a person or process.

BANDWIDTH – The maximum speed at which data can be transmitted between computers in a network. Bandwidth is usually expressed in bits per second (bps).

CLIENT SERVER ARCHITECTURE – A network configuration in which each computer on the network is either a client or a server. Servers are powerful computers used to manage disk drives (file servers), printers (print servers)), or network traffic (network servers). Clients are personal computers or workstations on which users run applications.

COMMERCIAL OFF-THE-SHELF (COTS) – Hardware and software components that are available commercially rather than being custom developed.

COMPILER – A program that translates source code written by programmers into object code. Object code instructs computers to execute specific actions.

DATA – Distinct pieces of information, usually formatted in a special way. All software is divided into two general categories: data and programs. Programs are collections of instructions for manipulating data.

DATABASE – A collection of information organized so that a computer program can quickly select desired pieces of data. A database can be thought of as an electronic filing system.

DATA BASE MANAGEMENT SYSTEM (DBMS) – Computer programs that enable users to create, maintain, manipulate, and retrieve file data and create useful reports.

DATA WAREHOUSING – The process of storing data in a structured and organized manner that ensures its availability for queries and analysis.

ELECTRONIC COMMERCE (E-COMMERCE) – The process of conducting business on-line or using the Internet.

ENCRYPTION – The process of converting data into "unreadable code" to prevent unauthorized access.

END USER – Ultimate user of a product or service.

ENTERPRISE – Any large organization that utilizes computers. An intranet, for example, is a good example of an enterprise computing system.

EXTRANET – A network that allows information to be accessed by authorized users in external organizations.

FILE SERVER – A computer that has been modified to store and transfer large amounts of data to other computers.

FIREWALL – A combination of specialized hardware and software designed to keep unauthorized users from accessing information within a networked computer system.

FIRMWARE – Computer software that has been permanently installed into a computer, and that performs tasks normally associated with computer hardware.

GOVERNMENT OFF-THE-SHELF (GOTS) – Hardware and software components that are available from Government agencies.

HARDWARE – Objects in a computer system that you can actually touch, like disks, disk drives, monitors, keyboards, printers, boards, and chips.

INFORMATION – Data that is organized according to the context in which it is used.

INFORMATION ASSURANCE – Operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and nonrepudiation.

INFRASTRUCTURE – All of the components that are necessary to support information technology activities; e.g., hardware, software, and networks.

INTERNET – A global network connecting millions of computers.

INTRANET – An internal network based on Internet protocols that is accessible only by users with proper authorization. An intranet's Web sites look and act just like any other Web sites, but the firewall surrounding an intranet prevents unauthorized access.

INTERNET PROTOCOL (IP) ADDRESS – An identifier for a computer or device on a network. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods; e.g. 1.160.10.240 could be an IP address.

KNOWLEDGE MANAGEMENT – An organized process for getting the right information to the right people at the right time.

LOCAL AREA NETWORK (LAN) – A computer network designed to share data and resources among several computers. Most LANs are confined to a single building or group of buildings. A group of LANs connected in this way is called a wide area network (WAN). LANs are capable of transmitting data at very fast rates but the distances are limited, and there is also a limit on the number of computers that can be attached to a single LAN.

METADATA – A description of how, when, and by whom a particular set of data was collected, and how the data is formatted. Metadata is essential for understanding information stored in data warehouses.

NETWORK – A group of two or more computer systems linked together to communicate and share resources. There are many types of computer networks, including local area networks and wide area networks.

OPERATING SYSTEM – The program that runs other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the monitor, keeping track of files and directories, and controlling peripheral devices such as disk drives and printers. For large systems, the operating system acts like a traffic cop – it makes sure that different programs and users running at the same time do not interfere with each other. Operating systems provide a platform on top of which other programs, called application programs , can run. Examples of commonly used operating systems are Windows NT and UNIX.

OUTSOURCING – Efforts to consider private sector alternatives to providing and delivering services required by the Government.

PROGRAMMING LANGUAGE – A set of rules that instructs a computer as to what operations to perform. Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions. The choice of which language to use depends on the type of computer the program will run on, the tasks to be accomplished, and the training of the applications developer. The term programming language usually refers to higher-level languages, such as BASIC, C, C++, COBOL, and FORTRAN as opposed to a lower-level language, such as assembly language or machine language.

PROTOCOL – A standard format for transmitting data between sending and receiving devices. An example of commonly used communications protocol is TCP/IP (Transmission Control Protocol/Internet Protocol).

SERVER – A computer or device on a network that manages network resources. For example, a *file server* is a computer dedicated to storing files. A *print server* is a computer that manages one or more printers. A database *server* is a computer that processes database queries.

SOFTWARE – Programs that instruct a computer as to how to process data and the documentation that explains how these programs should be used.

SYSTEM – A combination of components working together; e.g., a computer system including both hardware and software.

SYSTEMS DEVELOPMENT LIFE CYCLE – The complete process of developing information systems from requirements definition through maintenance.

SYSTEMS SOFTWARE – Low-level programs that interact with the computer at a very basic level. This includes operating systems, compilers, and utilities that manage computer resources.

TELECOMMUNICATIONS – Systems of hardware and software used to carry voice, video, and/or data between locations.

TOPOLOGY – The physical configuration of a network or networks. The term is generally used to refer to where each of the component parts is located in relation to each other.

VIRUS – A program which attaches itself to, overwrites, or otherwise replaces another program in order to reproduce itself without the knowledge of the computer user.

WEB PAGE – A document on the world wide web. Every web page is identified by a unique url (uniform resource locator).

WEB PORTAL – A web site that offers a broad array of resources and services, such as e-mail and search engines.

WEB SITE – A site (location) on the world wide web. Each web site contains a home web page, which is the first document users see when they enter the site. The site might also contain additional Web pages, documents, and files.

WIDE AREA NETWORK (WAN) – A network that spans a relatively large geographical area. A WAN typically consists of two or more local area networks (LANs).

WORLD WIDE WEB – A system of Internet servers that provides access to specially formatted documents usually referred to as Web sites.

APPENDIX H – HISTORICAL RECORD AND EXPLANATORY MATERIAL

This appendix describes the development of this job family standard (JFS). We highlight some key dates and milestones and provide information about proposals we tested and about our deliberations as we crafted the final version of the standard for issuance. We believe users will find the information helpful as background for understanding and applying the job family standard. Readers with extensive position classification experience may recall the forerunner of this appendix as the Explanatory Memorandum that we formerly issued with some final position classification standards.

KEY DATES AND MILESTONES

In **April 1999,** the Classification Programs Division (CPD) within the Office of Personnel Management (OPM) notified agencies that we were about to begin a study to develop the Job Family Position Classification Standard for Administrative Work in the Information Technology Group, GS-2200. This signaled our plan to establish a new occupational group, Information Technology, GS-2200 within the occupational structure of the General Schedule, thereby formally acknowledging through a fundamental Federal human resources management system the pervasive and profound impact that information technology (IT) has had on the ways agencies accomplish their missions throughout the Government.

We focused our initial efforts on establishing parenthetical specialty titles for the Computer Specialist Series, GS-0334, as part of a set of integrated activities by several OPM program offices that were working with the Interagency Advisory Group of Federal Personnel Directors (now the Human Resources Management Council) and the Federal IT Work Force Committee of the interagency Chief Information Officers (CIO) Council. We convened a series of focus groups during the summer of 1999 to explore the nature and extent of IT specializations that have developed within the broader Computer Specialist, GS-0334, occupational series and related occupational series (e.g., Telecommunications, GS-0391). On the basis of the information we obtained in the focus groups, in **October 1999** we proposed eleven new specialty titles for review and comment. Based on the comments received on the proposed titles, OPM established eleven new parenthetical specialty titles for the Computer Specialist Series, GS-0334, and made them available for optional use governmentwide in **March 2000**.

Proceeding from the work done to identify the specialty titles, we undertook intensive factfinding for the new IT job family standard beginning in March 2000 and continued through May 2000. We conducted this factfinding primarily by using focus groups composed of both IT and human resources (HR) specialists. We convened over 45 focus groups involving over 500 employees from virtually all major agencies. Our goal was to prepare a draft job family position classification standard covering two-grade interval administrative work then covered by the GS-0334 series, as well as positions performing two-grade interval information technology work in other series where knowledge of information technology principles, concepts, and methods is the paramount knowledge requirement. We applied the information gathered from the focus groups, along with information obtained from other sources such as position descriptions, organization

charts, and online resources, and released the draft IT job family standard for a 90-day review, test application, and comment period commencing in **July 2000**. That job family standard, now released here in final form for govermentwide implementation, is a "first installment" for the job family that will cover administrative (i.e., two-grade interval) work in the new occupational group for Information Technology, GS-2200. This first issuance is built around the successor occupation to the old Computer Specialist Series, GS-0334. Thus, with this issuance, we establish a **new occupational series, Information Technology Management**, **GS-2210,** and cancel the GS-0334 series.

We received over 35 individual agency comments in response to the draft standard, in addition to comments received from employees and others interested in the IT standard. We analyzed all of the comments we received, incorporated those that we deemed appropriate and prepared the final job family standard for issuance. In **March 2001**, we offered agencies a chance to provide a final, 30-day "quick review" (i.e., without test application) of the final job family standard before its official issuance in the Spring.

DEFINING PRESENT AND FUTURE STUDY COVERAGE

As noted above, from the outset, the occupational study that produced the present job family standard focused on the Computer Specialist Series, GS-0334. Future occupational studies will focus on additional occupations that are relevant to the new Information Technology Group, GS-2200. Several other job series involve information technology work. The Computer Operation Series, GS-0332, and the Computer Clerk and Assistant Series, GS-0335, are one-grade interval support and assistance occupations. We plan to initiate a study of the one-grade interval IT occupations and develop a job family standard to cover that Assistance Work in the Information Technology Group, GS-2200. The Computer Engineering Series, GS-0854, and Computer Science Series, GS-1550, are two-grade interval series. We will consult with the IT and HR communities to decide on an appropriate course of action for reviewing these occupations and determining their appropriate place in the Federal occupational structure.

In the discussion here, the Telecommunications Series, GS-0391, deserves some special attention. In October 1999, we requested agency comment on a proposal to abolish the GS-0391 series and consolidate the series into the proposed Information Technology Management Series. The basis for proposing this action was to recognize the evolving convergence between telecommunications and information technology. The response to this proposal was almost evenly divided between agencies favoring the consolidation and agencies opposing it. Given the lack of consensus, we decided to defer any action on this proposal. However, the present job family standard make clear that work previously classified as Telecommunications, GS-0391, should be classified to the Information Technology Management Series, GS-2210, when knowledge of information technology, as defined in this standard, is paramount.

Based on consultation with both the HR and IT communities, it appears that a significant number of positions classified to the GS-0391 series will be covered by the new Information Technology Management Series, GS-2210. This includes positions involved in data communications and network design, development, and administration that will be covered under the "Network

Services" parenthetical specialty title. Other GS-0391 positions may also be covered under one or more of the other specialty titles for the new GS-2210 series.

OPM plans to continue to study the GS-0391 work that will not be covered by the new GS-2210 series to determine the most appropriate course of action. One possible option is to establish additional specialty titles to cover the remainder of the GS-0391 work and to eventually abolish that series. This approach would entail factfinding, analysis, and review analogous to the process that was used to define the specialty titles in the new GS-2210 series. This option would be consistent with OPM's job family approach to the development of position classification standards. Another option, of course, would be to retain the GS-0391 series and include it in the job family occupational study covering other Administrative Work in the General Administration, Clerical, and Offices Services Group, GS-0300, which we will undertake in the future. OPM will continue to consult with our stakeholders in determining the most appropriate approach.

RESULTS OF AGENCY REVIEW, COMMENT, AND TEST APPLICATION

A. JOB FAMILY STANDARDS – GENERAL ISSUES. In addition to using the job family standard approach to developing and issuing position classification standards, we make every attempt to simplify and streamline position classification concepts, documents, and procedures with every issuance of a new job family standard. This standard incorporates many lessons learned from recent job family standard issuances.

- **Retaining "Knowledge Required by the Position" to Describe Factor 1**. We had proposed renaming Factor 1 to "Competencies Required by the Position" and asked agencies for their views about the change.

  Agency Comments: The response to this issue was mixed. Some agencies stated that use of the term *competencies* was a step forward in recognizing the importance of competencies in identifying the specific requirements necessary to perform the work. Other agencies stated that the definition of competencies was an employment process that was more appropriate to the rating of an individual applicant's qualifications rather than the classification of the duties and responsibilities assigned to a position.

  Our Response: We will continue to use "Knowledge Required by the Position" as the name of Factor 1 in this and future JFSs. Factor level descriptions for this factor will continue to focus on the kind or nature of the knowledge and skill needed and how that knowledge and those skills are used in doing the work. In effect, Factor 1 represents the area within OPM's classification and qualification guidance where the most specific and refined govermentwide descriptions of the technical competencies required for a class of positions can be found.

- **Guidance on Distinguishing Two-Grade Interval Work From One-Grade Interval Work.** The draft job family standard released for comment did not include guidance on how to distinguish specialist (i.e., two-grade interval) positions from support (i.e., one-grade interval) positions.

Agency Comments: Several agencies requested that OPM provide additional guidance on distinguishing between two-grade interval IT work and one-grade interval IT work.

Our Response: We have added a section about "Distinctions Between Administrative Work and Assistance Work" to **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE**, and will use such guidance in other job family standards when it is relevant.

- **Describing Grading Criteria at Factor Level 1-9 for Administrative Work.** Our past practice has been to describe a factor level only when that level represents a significant sample of real nonsupervisory jobs found during an occupational study and when the jobs are similar enough to form the basis for a genuine factor level description. As a consequence, as of December 2000, only a few existing administrative FES standards contain Factor Level 1-9 criteria.

  We are changing that practice. By its nature, fact-finding for job family studies, with their multiple occupations, is not and cannot be exhaustive. Given that limitation, we must weigh the implications of not finding work at a certain level with what else we know about the evolution of work in a particular area, as well as with users' needs for comprehensive grading criteria. Past guidance for grading positions that appeared to exceed the available factor level descriptions was to examine related standards and guides and apply the Primary Standard. That guidance was appropriate in the past, when agencies carried substantial staffs of experienced position classification specialists. Such staff resources are waning, however, and agencies will probably not reestablish those previous resource levels. Consequently, we have decided to describe Factor Level 1-9 for both professional and administrative occupations, when we believe there is justification, so that users can be more fully equipped to make classification determinations.

  However, along with this change in practice, we must also urge caution. It is important for users to understand that we are adding Factor Level 1-9 criteria for administrative occupations only to support accurate position classification determinations. We are not including them to signal that work at that level was found to be typical for the occupations. We expect that very few work situations will justify crediting Factor Level 1-9 knowledge in either professional or administrative occupations. Agency officials must be vigilant to maintain classification accountability, as has always been the case.

B. THE GS-2200 JOB FAMILY STANDARD FOR ADMINISTRATIVE WORK – SPECIFIC ISSUES. We also requested our stakeholders to respond to a set of specific questions about the draft job family standard for administrative information technology work.

- **Does the draft standard provide adequate information for classifying covered positions? If not, please provide any additional information and illustrations you believe are relevant.**

  Agency Comments: Most agencies stated that the draft standard provided adequate information for classifying covered positions and represented a significant improvement over the current GS-0334 Computer Specialist standard. Several agencies provided additional information and illustrations. Several agencies requested that OPM provide additional

guidance in distinguishing between two-grade interval information technology work and one-grade interval information technology work. Several agencies also requested additional occupational information.

Our Response: We used the comments on this question to make refinements to the job family standard and its grading criteria. We added a number of new illustrations where appropriate. We also added an expanded glossary in a new **APPENDIX G — INFORMATION TECHNOLOGY GLOSSARY**. We incorporated an overview of IT specialties to **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE** and will continue to expand the occupational information, including material about the relationships among the specialties, before the final job family standard is issued for implementation.

- **Do the parenthetical specialty titles adequately cover all major specialty areas within the IT occupation? If not, what other specialties would you recommend and why?**

Agency Comments: Most agencies stated that the parenthetical specialty titles adequately covered all major IT specialty areas. Several agencies suggested revisions to the titles and/or additional specialty titles. Many agencies recommended shortening the proposed titles to accommodate the limits of human resources information systems. Some agencies stated that they preferred to use parenthetical specialty titles different from those established in the draft.

Our Response: We did not add new titles at this time. However, we will continue reviewing the occupation to determine the feasibility of adding new titles as new specialties evolve. As in the past, we will partner with our stakeholders in conducting the factfinding and deliberations necessary to make these determinations.

We did revise or shorten several specialty titles. We also provided abbreviations for the basic title and the specialty titles for optional use.

We clarified that agencies may use other parenthetical specialty titles where circumstances dictate. The use of specialty titles is optional; however; there are many benefits that accrue from the use of specialty titles, especially in terms of recruitment and workforce planning. Agencies may continue to use internal organizational titles as appropriate.

- **The "General" parenthetical specialty covers positions that can not be classified in any of the other specialties. Do you agree with this proposed use of the General specialty? If not, what alternative would you suggest?**

Agency Comments: Many agencies opposed establishment of the "General" specialty title. The prevailing opinion was that this title provided no descriptive information about the work being performed or about the special qualifications required and therefore did not serve the purpose of a specialty title.

Our Response: We eliminated the "General" specialty title. The basic title, ***Information Technology Specialist***, is appropriate for positions that are not classifiable to any of the established specialties.

- **Is it practical and/or necessary to use more than two specialty titles for a single position?**

  Agency Comments: T*he* majority of the agencies that responded stated that it was not practical or necessary to use more than two specialty titles for a single position. Many of these same agencies stated that situations where more than two specialty titles were necessary were limited except in small or remote organizations where positions may be assigned three or more specialties for practical reasons. The most common suggestion for titling positions involving more than two specialties was to use the basic title without any parenthetical specialty titles.

  Our Response: We decided to authorize use of the basic title without a parenthetical specialty title as the official position title for those positions that include two or more specialized IT functions when none predominates or when there is no established specialty that applies to the work.

- **It is important to keep this standard current given the dynamic nature of the occupation. Can you suggest ways to accomplish this?**

  Agency Comments: Almost every agency that responded to the standard emphasized the importance of keeping this standard current. The primary reason given for this was the expectation that the IT occupation will continue to evolve in a very rapid manner, thereby requiring appropriate adjustments to be made to the standard. There were many suggestions for ensuring the currency of the standard. The most commonly suggested way was to conduct a joint OPM, HR, and IT community review of the standard at least every 12–18 months to identify changes in the occupation and the manner in which they should be addressed in the standard. Most agencies favored using subject matter expert focus groups to collect the occupational information needed to update the standard.

  Our Response: We will continue partnering with the HR and IT communities to keep the standard current. We will use the Human Resources Management Council and the Chief Information Officers' Council as our primary liaisons with the respective communities. In cooperation with these groups, we will establish a procedure for regularly reviewing and, as necessary, revising the standard. We believe that the format used in the IT job family standard and other recently published standards, which includes much of the occupation-specific information in appendices, will facilitate the updating process.

- **Assessing Impact on Grades.** We followed our usual practice of requesting that agencies report any effects that applying the draft job family standard had on the grades of the tested positions.

  Agency Comments: Most agencies reported the test application of the draft job family standard resulted in no changes to current grades. Several agencies requested that OPM review the factor level descriptions and illustrations for internal consistency.

Our Response: We conducted an extensive review of the factor level descriptions and illustrations for adequacy and consistency that included validation by a special focus group of IT subject matter experts. We made several adjustments as a result.